

6-1-2000

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Recommended Citation

Terril Lewis, *Reverse Engineering of Software: An Assessment of the Legality of Intermediate Copying*, 20 Loy. L.A. Ent. L. Rev. 561 (2000).
Available at: <http://digitalcommons.lmu.edu/elr/vol20/iss3/2>

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REVERSE ENGINEERING OF SOFTWARE: AN ASSESSMENT OF THE LEGALITY OF INTERMEDIATE COPYING

*Terril Lewis**

I. INTRODUCTION

In 1980, Congress, in adopting the recommendations of the Commission on New Technological Uses of Copyrighted Works ("CONTU"), made it clear the Copyright Act protects computer programs.¹ By ensuring copyright protection extended to computer software, Congress encouraged creative contributions in software by awarding authors certain exclusive rights to their works.

"Author reward," however, is not the only policy copyright law seeks to promote. The Supreme Court has stated that "the primary objective of copyright is not to reward the labor of authors, but "[t]o promote the Progress of Science and the useful Arts."² To further the primary goal of copyright law, "copyright assures authors the right to their original expression, but encourages others to build freely on the ideas and information conveyed by a work The result is neither unfair, nor unfortunate. It is the means by which copyright advances the progress of science and art."³

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1. See *Apple Computer, Inc. v. Franklin Computer Corp.*, 714 F.2d 1240, 1247 (3d Cir. 1983) (discussing Congress' adoption of CONTU's recommendations, which made "it explicit that computer programs, to the extent that they embody an author's original creation, are proper subject matter of copyright"); see also 17 U.S.C. § 101 (1994) (defining "computer program"). Under § 102, Congress considers computer programs to be a subset of "literary works." See H.R. REP. NO. 94-1476, at 54 (1976).

2. *Feist Publications, Inc. v. Rural Tel. Serv. Co.*, 499 U.S. 340, 349 (1991) (quoting U.S. CONST. art I, §8, cl.8).

3. *Id.* at 349-50; see *Bonito Boats, Inc. v. Thunder Craft Boats, Inc.*, 489 U.S. 141, 146 (1989). The Patent and Copyright clause "reflects a balance between the need to encourage innovation and the avoidance of monopolies which stifle competition without any concomitant advance in the 'Progress of Science and useful Arts.'" *Id.*; see also *Sony Corp. v. Universal City Studios, Inc.*, 464 U.S. 417, 429 (1984) (stating determination of the scope of limited monopolies granted to authors or inventors "involves a difficult balance between the interests of authors and inventors in the control and exploitation of their writings and discoveries on the one hand, and

The copyright policies of "author reward" and "idea dissemination" will likely clash where it is unclear whether subject matter ostensibly appropriated by another is protectable or whether it contains both protectable and unprotectable elements. A technological practice that brings this conflict to a head is the reverse engineering of software, which involves working backward from a finished software program to determine how the program operates. In contexts outside of copyright law, the Supreme Court has noted reverse engineering is not necessarily a subversive and disfavored practice.⁴ Rather, it is a practice that can serve the public by providing access to information.⁵ Indeed, Congress has expressly approved the practice of reverse engineering in other technological contexts, such as the development of mask works for semiconductor chips.⁶ On the other hand, the Copyright Act does not clearly legitimize the reverse engineering of software.

The Copyright Act raises significant questions for reverse engineers: how can the reverse engineer safely and freely build on ideas and information conveyed by another's software? Will the reverse engineer run afoul of another author's copyright "reward," and if so, what potential liabilities will arise? How can these actions be defended, thereby promoting the dissemination of ideas and the financial well-being of the reverse engineer?

This Article suggests the proper analysis for determining the legality of the reverse engineering of software. The Article concludes although reverse engineers of software are usually copyright infringers, they may be able to escape liability for infringement by employing a number of defensive measures. However, in many instances, even if reverse engineers manage to escape liability under the Copyright Act, they may remain liable under state law for breach of license, or under the Digital Millennium Copyright Act ("DMCA").⁷

society's competing interest in the free flow of ideas, information and commerce on the other hand . . .").

4. See *Kewanee Oil Corp. v. Bicron Corp.*, 416 U.S. 470, 476 (1974). Reverse engineering of a trade secret is a "fair and honest means . . . [of] starting with the known product and working backward to divine the process which aided in its development or manufacture." *Id.*; see also *Bonito Boats*, 489 U.S. at 160 ("Reverse engineering of chemical and mechanical articles in the public domain often leads to significant advances in technology.").

5. See *Bonito Boats*, 489 U.S. at 160.

6. See 17 U.S.C. § 906(a) (1994).

7. Digital Millennium Copyright Act, Pub. L. No. 105-304, 112 Stat. 2860 (1998).

II. REVERSE ENGINEERING AND THE INTERMEDIATE COPYIST

Reverse engineering involves starting with a finished software program and working backward to analyze how the program operates. Because a finished software program is distributed in the form of object (binary) code,⁸ it must be disassembled or decompiled in order to transform the object code into a language humans can read, such as BASIC or C+.⁹ Once the code is transformed, the reverse engineer can analyze the structure of the program and put the information to a variety of uses.¹⁰

Commentators have noted the reverse engineering of software encompasses a diverse range of activities undertaken for an equally diverse range of purposes.¹¹ However, this Article focuses on the making of an *intermediate copy*¹² of an original software work for the purpose of developing a new software product that otherwise does not infringe the original work.¹³ This intermediate copy can be as innocuous as loading the

8. See *Sega Enters. v. Accolade, Inc.*, 977 F.2d 1510, 1525 (9th Cir. 1993) ("Computer programs . . . are typically distributed for public use in object code form, embedded in a silicon chip or on a floppy disk.").

9. See generally U.S. CONGRESS, OFFICE OF TECH. ASSESSMENT, FINDING A BALANCE: COMPUTER SOFTWARE, INTELLECTUAL PROPERTY, AND THE CHALLENGE OF TECHNOLOGICAL CHANGE 125-58 (1992); Andy Johnson-Laird, Technical Demonstration of Decompilation, Address, in COPYRIGHT PROTECTION OF SOFTWARE: DERIVATIVE WORKS AND REVERSE ENGINEERING, 361-87 (1992).

10. See U.S. CONGRESS, OFFICE OF TECH. ASSESSMENT, FINDING A BALANCE: COMPUTER SOFTWARE, INTELLECTUAL PROPERTY AND THE CHALLENGE OF TECHNOLOGICAL CHANGE 148 (1992).

11. See generally G. Gervaise Davis III, *Scope of Protection of Computer-Based Works: Reverse Engineering, Clean Rooms and Decompilation*, in 370 COMPUTER L. INST., 115, 142-43 (PLI Patents, Copyrights, Trademarks, and Literary Property Practice Course Handbook Series No. G-370, 1993) (listing teaching, writing, debugging, emulation, modification, achieving interoperability and developing competitive replacements as various rationales for reverse engineering).

12. Reverse engineering may require the making of an intermediate copy of a software program. "Intermediate copies may include 'the computer file generated by the disassembly program, the printouts of the disassembled code, and the computer files containing . . . modifications of the code that were generated during the reverse engineering process.'" John G. Mills, *Possible Defenses to Complaints for Copyright Infringement and Reverse Engineering of Computer Software: Implications for Antitrust and I.P. Law*, 80 J. PAT. & TRADEMARK OFF. SOC'Y 101, 106 (1998) (citation omitted).

13. A reverse engineer who produces an infringing work—one that is substantially similar to the infringed work—will face a relatively straightforward copyright infringement analysis. In such a case, reverse engineering would be relevant in determining whether the infringer had "access" to the infringed work. See, e.g., *Computer Assocs. Int'l, Inc. v. Altai, Inc.*, 982 F.2d 693, 701 (2d Cir. 1992) ("The plaintiff may prove defendant's copying either by direct evidence or, as is most often the case, by showing that (1) the defendant had access to the plaintiff's copyrighted work and (2) that defendant's work is substantially similar to the plaintiff's copyrightable material."). Furthermore, this Article does not address those forms of reverse

object code of the original software into the Random-Access-Memory "(RAM)" of the computer being used for analysis¹⁴ or by the creation of a disassembled version of the object code.¹⁵

Holding an intermediate copyist liable for copyright infringement in the course of producing an otherwise non-infringing work may seem counterintuitive or simply unfair. In practice, it is therefore not surprising that an analysis of the infringement liability of the intermediate copyist is colored by considerations of copyright policy and fairness. This analysis takes account of the fact the reverse engineer is generally not a "free rider," but has likely put considerable effort into developing their work.¹⁶

III. INTERMEDIATE COPYISTS ARE LIKELY INFRINGERS

A person who reverse engineers a piece of software will almost certainly infringe the copyright in that software through the creation of an intermediate copy of the work.¹⁷ Because the object code and source code of a computer program are protectable forms of expression,¹⁸ their reproduction is a direct infringement of the author's exclusive right of reproduction.¹⁹

A. The Application of Abstraction-Filtration-Comparison Reveals an Intermediate Copyist Will Likely Appropriate Protectable Expression

Implicit in the conclusion that intermediate copyists are copyright infringers is the assumption the copied software program embodies protectable subject matter.²⁰ It is well established that copyright law

engineering that involve monitoring the operation of an original software work or otherwise do not involve direct reproduction of the work under analysis.

14. See *MAI Sys. Corp. v. Peak Computer, Inc.*, 991 F.2d 511, 518 (9th Cir. 1993).

15. See *Sega*, 977 F.2d at 1525 ("[D]isassembly is wholesale copying.").

16. *Davis*, *supra* note 11, at 122. Reverse engineering "is not a free ride for the second program author, who must develop her own functionally compatible program without using the protected expression of the first author." *Id.*

17. See *Mills*, *supra* note 12, at 106. The reverse engineering process requires a reverse engineer to copy an original computer program "either by loading the program into computer memory or copying the program to other media such as a printer or display for further study. This unauthorized act of copying violates one of the bundle of rights conveyed on the copyright holder under 17 U.S.C. § 106." *Id.*

18. See *Apple Computer, Inc. v. Franklin Computer Corp.*, 714 F.2d 1240, 1249 (3d Cir. 1983) ("[A] computer program, whether in object code or source code, is a 'literary work' and is protected from unauthorized copying, whether from its object or source code version.").

19. See 17 U.S.C. § 106(1) (1994).

20. *Sony Computer Entertainment, Inc. v. Connectix Corp.*, 203 F.3d 596, 599 (9th Cir. 2000) ("Copyrighted software ordinarily contains both copyrighted and unprotected or functional elements.").

protects only an author's expression, and not "any idea, procedure, process, system, method of operation, concept, principle or discovery."²¹ Even the otherwise protectable expression of an idea will be precluded from copyright protection under the doctrine of "merger,"²² which occurs when ideas can be expressed in only a limited number of ways.²³ Moreover, expressions that are standard, stock or common in a particular trade are unprotectable as "*scènes à faire*."²⁴ Functional elements are similarly excluded from protection,²⁵ as is factual material.²⁶ Works that do not meet the originality requirement of § 102(a)²⁷ also do not qualify for protection. Finally, subject matter in the public domain is free for the taking and is not protectable by copyright.²⁸ These limitations bear heavily on the determination of the protectability of utilitarian articles, such as software, that "combine[] creative and technical expression."²⁹ While these limitations do not eviscerate the protection provided to software under the

21. 17 U.S.C. § 102(b) (1994).

22. *Toro Co. v. R & R Prods. Co.*, 787 F.2d 1208, 1212 (8th Cir. 1986) (citing *Morrissey v. Proctor & Gamble Co.*, 379 F.2d 675, 678-79 (1st Cir. 1967)).

23. *See Toro Co. v. R & R Prods. Co.*, 787 F.2d 1208, 1212 (8th Cir. 1986).

24. *See Computer Assocs. Int'l., Inc. v. Altai, Inc.*, 982 F.2d 693, 709 (2d Cir. 1992). Programmers are often restricted by such considerations as 1) the mechanical specifications of the computer on which a particular program is intended to run; 2) compatibility requirements of other programs with which a program is designed to operate in conjunction; 3) computer manufacturers' design standards; 4) demands of the industry being serviced; and 5) widely accepted programming practices within the computer industry. *Id.* at 709-10 (citation omitted).

25. *See Bateman v. Mnemonics, Inc.*, 79 F.3d 1532, 1547 (11th Cir. 1996) ("External considerations such as compatibility may negate a finding of infringement."). In a footnote, the court explained whether external considerations can negate a finding of infringement depends on the specific facts of a given case. As a result, the court declined to create a bright-line rule. However, the court went on to state "[i]n no case ... should copyright protection be extended to functional results obtained when program instructions are executed and such results are processes of the type better left to patent and trade secret protection." *Id.* at 1547 n.33.

26. *See Feist Publications, Inc. v. Rural Tel. Serv. Co.*, 499 U.S. 340, 350-51 (1991) (noting facts are not copyrightable, but compilations of facts are copyrightable if their selection, coordination, or arrangement in the compilation involves sufficient originality).

27. *See* 17 U.S.C. § 102(a) (1994) ("Copyright protection subsists . . . in original works of authorship fixed in any tangible medium of expression . . .") (emphasis added); *see also Toro*, 787 F.2d at 1216 (holding plaintiff's equipment part numbers lacked sufficient originality to warrant copyright protection). "The arbitrary assignment of randomly chosen numbers to a particular replacement part does not evince enough authorship for copyright protection." *Id.*; *see also Mitel, Inc. v. Iqtel, Inc.*, 124 F.3d 1366, 1373-74 (10th Cir. 1997) (citing *Toro* in support of its holding plaintiff's three or four digit command codes were not sufficiently original to warrant copyright protection).

28. *See Computer Assocs.*, 982 F.2d at 710.

29. *Id.* at 704 (citations omitted); *see also Sony Computer*, 203 F.3d at 603 ("[I]n the case of computer programs, [the] idea/expression distinction poses 'unique problems' because computer programs are 'in essence, utilitarian articles—articles that accomplish tasks.'").

Copyright Act, they make it difficult to draw a line between what is protectable and what is not in a given piece of software.

The leading approach for determining the scope of protection for a particular software program is the three-part "abstraction-filtration-comparison" test, first announced by the Second Circuit in *Computer Associates International, Inc. v. Altai, Inc.*³⁰ First, the "abstraction" step characterizes the program at increasing levels of generality, from the object code to the flow of the program and eventually to the program's very theme. Second, the "filtration" step applies the foregoing limitations on the subject matter of copyright to whittle away the unprotectable elements from each level of abstraction. Together, these first two steps define what is protectable in the copied software.³¹ Finally, the "comparison" step contrasts protectable elements of the copied work from the alleged infringing work to determine if the two are substantially similar. If substantial similarity exists, the copied work has been infringed.³²

Notably, the abstraction-filtration-comparison test was designed specifically to address non-literal infringement, i.e., infringement of those aspects of computer programs that are not reduced to written code.³³ The *Computer Associates* court took for granted "the literal elements of computer programs, i.e., their source and object codes, are the subject of copyright protection."³⁴ Other courts have worked literal elements into their analyses of protectable subject matter, perhaps recognizing literal expression may contain unprotectable elements in need of filtration.³⁵ For

30. 982 F.2d 693 (2d Cir. 1992).

31. See *id.* at 710 (explaining abstraction and filtration reveal the "core of protectable expression. In terms of a work's copyright value, this is the golden nugget").

32. The abstraction-filtration-comparison was born out of case law not involving software. See *Nichols v. Universal Pictures Corp.*, 45 F.2d 119, 121 (2d Cir. 1930) (Hand, J.). In *Nichols*, the court stated:

Upon any work . . . a great number of patterns of increasing generality will fit equally well, as more and more of the incident is left out. The last may perhaps be no more than the most general statement of what the [work] is about, and at times might consist only of its title; but there is a point in this series of abstractions where they are no longer protected, since otherwise the [author] could prevent the use of his 'ideas,' to which, apart from their expression, his property is never extended.

Id. Thus, it is not surprising that some courts have applied this test in contexts outside of copyright infringement of software. See, e.g., *Country Kids N' City Slicks, Inc. v. Sheen*, 77 F.3d 1280, 1284 (10th Cir. 1996) (applying the abstraction-filtration-comparison test to assess the infringement of plaintiff's wooden dolls).

33. See *Computer Assocs.*, 982 F.2d at 710 ("[T]his case deals with the challenging question of whether and to what extent the 'non-literal' aspects of a computer program, that is, those aspects that are not reduced to written code, are protected by copyright.").

34. *Id.* at 702.

35. See *Bateman*, 79 F.3d at 1545 ("Since the district court instructed the jury that *Altai* filtration was limited to nonliteral copying, the jury must have concluded that any instances of

example, in *Gates Rubber Co. v. Bando Chemical Industries*,³⁶ the Tenth Circuit suggested "a computer program can often be parsed into at least six levels of generality declining abstraction: (i) the main purpose, (ii) the program structure or architecture, (iii) modules, (iv) algorithms and data structures, (v) source code, and (vi) object code."³⁷ More importantly, the court noted a computer program's literal elements are less likely to contain unprotectable elements and will therefore "almost always be found to be protectable expression unless the doctrine of merger and *scenes à faire* come into play."³⁸

When the mechanics of reverse engineering are considered in light of the foregoing considerations, it becomes clear that software copied by the intermediate copyist will likely contain protectable subject matter. For example, the intermediate copyist will probably copy the literal elements of a program verbatim by loading object code into RAM or by decompiling the object code into source code. Therefore, the *Gates Rubber* court correctly noted the copying of a program's literal elements will most likely constitute infringement, given the likelihood such elements contain protectable expression. This is true even if the amount of protectable expression is small and, consequently, the copyright is "thin."³⁹ Given the technical characteristics of software and the current status of the case law, it is exceedingly difficult for an intermediate copyist to study an original software work without creating a copy of the work,⁴⁰ thereby infringing at least some "nugget" of protected expression. Moreover, no express

literal copying . . . were by definition acts of copyright infringement. This conclusion is a manifest distortion and misstatement of the law.").

36. 9 F.3d 823 (10th Cir. 1993).

37. *Gates Rubber Co. v. Bando Chem. Indus.*, 9 F.3d 823, 835 (10th Cir. 1993).

38. *Id.* at 836.

39. See *Triad Sys. Corp. v. Southeastern Express Co.*, 64 F.3d 1330, 1335 (9th Cir. 1995) ("Because Southeastern's service activities involved copying entire programs, there is no doubt that protected elements of the software were copied.") (citing *Sega Enters. Ltd. v. Accolade, Inc.* 977 F.2d 1510, 1525 (9th Cir. 1993)); *Atari Games Corp. v. Nintendo of Am., Inc.*, 975 F.2d 832, 840 (Fed. Cir. 1992) ("Even for works warranting little copyright protection, verbatim copying is infringement.") (citations omitted); Richard Stern, *The Bundle of Rights Suited to New Technology*, 47 U. PITT. L. REV. 1229, 1239 (1985) ("When a defendant's computer program contains code that is an exact copy of or quite close to an exact copy of the code in a plaintiff's copyrighted computer program, the defendant will almost surely be held liable to the plaintiff for copyright infringement."); see also *Feist Publications, Inc. v. Rural Tel. Serv. Co.*, 499 U.S. 340, 349 (1991) (noting "copyright in a factual compilation is [inevitably] thin," because only the selection and arrangement of the facts in a compilation is expression entitled to protection under the Copyright Act).

40. See CRAIG JOYCE ET AL., COPYRIGHT LAW 530 (3d ed. 1994) ("The problems posed by [intermediate] copying are particularly difficult in the context of computer software copyright, because it may be hard to analyze the unprotected features of a copyrighted program by other means.").

provision of the Copyright Act clearly legitimizes the activities of the intermediate copyist.⁴¹

At least one court has taken the conclusion that intermediate copying is likely an infringement to an extreme. In *Sony Computer Entertainment, Inc. v. Connectix Corp.*,⁴² the district court, in a decision later reversed on other grounds,⁴³ held the intermediate copying of software is per se infringement. In *Sony*, defendant Connectix built an emulator that allowed its customers to play Sony's video game cartridges on their personal computers.⁴⁴ To build the emulator, Connectix had to make a copy of the Basic Input/Output System BIOS code in Sony's PlayStation game console.⁴⁵ Connectix first downloaded a copy of the BIOS code from the Internet.⁴⁶ After discovering the downloaded BIOS code was the wrong version, Connectix dismantled a Sony PlayStation console, removed the BIOS chip, and downloaded the PlayStation code onto its own computers.⁴⁷ After studying Sony's BIOS code, Connectix eventually developed its own code for use in its emulator.⁴⁸ Sony alleged the intermediate copying of its BIOS code was an infringement and requested a preliminary injunction.⁴⁹

The district court granted the preliminary injunction, finding Sony would likely prevail on the merits of its copyright infringement claim at trial.⁵⁰ The court cited *MAI Systems Corp. v. Peak Computer, Inc.*⁵¹ and *Triad Systems Corp. v. Southeastern Express Co.*⁵² in rejecting Connectix's argument that Sony had not met its initial burden of showing, through a "filtration analysis," its BIOS code was entitled to copyright protection. The district court indicated in *MAI Systems*, a filtration analysis was not necessary "because the entire copyrighted operating system had been used

41. See *Sega Enters. Ltd. v. Accolade, Inc.*, 977 F.2d 1510, 1521 (9th Cir. 1993) (noting the Copyright Act does not provide a "per se exemption to section 106 for disassembly. . .").

42. 48 F. Supp. 2d 1212 (N.D. Cal. 1999), *rev'd on other grounds*, 203 F.3d 596, 608 (9th Cir. 2000).

43. The Ninth Circuit reversed the district court's conclusion that Connectix's intermediate copying had not been a fair use. See *Sony Computer Entertainment, Inc. v. Connectix Corp.*, 203 F.3d at 608; see also *infra* Part IV.A. Connectix did not contest that it had copied on appeal.

44. See *id.* at 1215.

45. See *id.* at 1215-16.

46. See *id.*

47. See *id.* at 1216.

48. See *id.*

49. See *Sony Computer*, 48 F. Supp. 2d at 1216.

50. See *id.* at 1224.

51. 991 F.2d 511 (9th Cir. 1993).

52. 64 F.3d 1330 (9th Cir. 1995).

in the accused's computer."⁵³ Furthermore, the *Sony Computer* court relied on *Triad Systems*, stating "[i]n the wholesale copying of a copyrighted operating system, a filtration analysis is not necessary."⁵⁴

The court's decision in *Sony Computer* and the Ninth Circuit cases upon which it relies are questionable. While it is likely the copyright holder can show the appropriation of some nugget of protected expression, such a result should not be preordained. Not all copied software will contain protectable expression, particularly if the amount copied is relatively small or if other limitations on the subject matter of copyright, such as merger or functionality, apply in a given case.⁵⁵ Courts would therefore be wise not to follow the assumption of the district court in *Sony Computer* that wholesale copying of another's computer program necessarily constitutes infringement. The copyright holder should first be required, through abstraction and filtration, to establish the copied work contains some protectable expression. To require any less is to run the risk that subject matter other than protectable expression is retracted from the public domain and inadvertently protected by copyright.

B. Some Courts Have Applied an Erroneous Analysis When Assessing Whether Intermediate Copying Constitutes Infringement

Some courts have declined to hold intermediate copyists liable under the Copyright Act when they have not marketed an otherwise infringing product. These courts have failed to apply the Copyright Act according to its terms, and perhaps these courts have overlooked the fact the reproduction right of § 106(1) is separate and distinct from the distribution right of § 106(3). In a typical copyright infringement case, the infringer violates both of these rights by making *and* marketing an infringing copy.⁵⁶ By contrast, the intermediate copyist infringes only the reproduction right,⁵⁷ but this infringement is not rendered ineffectual by the absence of the infringement on the distribution right.

In the case of *Walker v. University Books, Inc.*,⁵⁸ the defendants made blueprints of plaintiff's "I Ching" cards as an intermediate step in making their own cards. The court noted even an "inchoate representation of some final product to be marketed commercially" may constitute an

53. *Sony Computer*, 48 F. Supp. 2d at 1217.

54. *Id.*

55. See *supra* notes 21–28 and accompanying text.

56. See JOYCE, *supra* note 40, at 499.

57. See *supra* note 13 and accompanying text.

58. 602 F.2d 859 (9th Cir. 1979).

infringement.⁵⁹ It was no defense that defendants used the blueprints "as merely a step in the manufacture of their [own] cards."⁶⁰ The issue was whether they utilized the plaintiff's work without authorization in the manufacture of their product.⁶¹ The fact the defendant's copy was in a different medium and the blueprints were never sold did not preclude an infringement of copyright.⁶²

Courts have correctly applied the principle of *Walker* by holding intermediate copyists of software to be infringers.⁶³ For example, the Ninth Circuit, in *Sega Enterprises v. Accolade, Inc.*,⁶⁴ addressed whether Accolade had infringed copyrights in Sega's game cartridges by making intermediate copies of them for the purpose of determining how they interacted with Sega's game console. The court concluded the reproduction right of § 106(1) "[o]n its face . . . unambiguously encompasses and proscribes 'intermediate copying.'"⁶⁵ In reaching this conclusion, the court noted a copy, for purposes of the Copyright Act, "must be fixed in some tangible form 'from which the work can be perceived, reproduced, or otherwise communicated, either directly or with the aid of a machine or device.'"⁶⁶ After finding Accolade's various computer files and printouts of Sega's code met this definition, the court concluded Accolade's activities fell "squarely within the category of facts that are prohibited by the statute."⁶⁷ Importantly, the court also recognized "intermediate copying of computer object code may infringe the exclusive rights granted to the copyright owner in § 106 of the Copyright Act

59. *Walker v. University Books, Inc.*, 602 F.2d 859, 864 (9th Cir. 1979); see also *Walt Disney Prods. v. Fimlition Assocs.*, 628 F. Supp 871, 876 (C.D. Cal. 1986) (holding copyright "prohibits the creation of copies, even if the creator considers those copies mere interim steps toward some final goal" and even if those copies are not distributed).

60. *Walker*, 602 F.2d at 864.

61. See *id.*

62. *Id.*

63. See, e.g., *Hubco Data Prods. Corp. v. Management Assistance, Inc.*, 219 U.S.P.Q. 450 (D. Idaho 1983). In *Hubco*, the defendant discovered how to modify the plaintiff's operating software to make it run faster. This involved the intermediate step of either making a printout of or copy of the operating software within the machine being upgraded. At the preliminary injunction stage the court held that plaintiff had shown a reasonable likelihood that either of the defendant's methods infringed the plaintiff's reproduction right. *Id.* at 456. The court's holding was apparently limited to adjudging the propriety of making the intermediate copy, and not the propriety of the final "modified" version of the program (which might constitute, at least, an infringing derivative work). *Id.* As such, the facts of *Hubco* provide a good example of the potential liability faced by the intermediate copyist. See *S & H Computer Sys. v. SAS Inst.*, 568 F. Supp. 416, 422 (M.D. Tenn. 1983).

64. 977 F.2d 1510 (9th Cir. 1992).

65. *Sega Enters. Ltd. v. Accolade, Inc.*, 977 F.2d 1510, 1518 (9th Cir. 1992).

66. *Id.* (citations omitted).

67. *Id.*

regardless of whether the end product of the copying also infringes those rights.”⁶⁸

The *Sega* court acknowledged not all courts have assessed intermediate copying of software in light of the “unambiguous language” of the Copyright Act.⁶⁹ For example, in *NEC Corp. v. Intel Corp.*,⁷⁰ the district court, in dicta, opined it was improper to adjudge infringement of intermediate copies. Instead, the court stated the proper focus should be on the end product the intermediate copyst ultimately commercialized.⁷¹ The court relied on *See v. Durang*⁷² to conclude that because the version of the microsequence NEC marketed had been substantially changed from the version it had allegedly copied, there remained “no basis for a claim of copying or even of substantial similarity.”⁷³ The court also quoted *Eden Toys, Inc. v. Marshall Field & Co.*,⁷⁴ stating “a defendant may legitimately avoid infringement by intentionally making sufficient changes in a work which would otherwise be regarded as substantially similar to that of the plaintiff.”⁷⁵

The district court in *E.F. Johnson Co. v. Uniden Corp. of America*⁷⁶ expressed a similar view:

The mere fact that defendant’s engineers dumped, flow charted, and analyzed plaintiff’s code does not, in and of itself, establish pirating. As both parties’ witnesses admitted, dumping and analyzing competitors’ codes is a standard practice in the industry. Had Uniden contented itself with surveying the general outline of the EFJ program, thereafter converting the scheme into detailed code through its own imagination, creativity, and independent thought, a claim of infringement would not have arisen.⁷⁷

68. *Id.* at 1519 (emphasis added).

69. *Cf. id.* (noting, however, a “close reading of those cases . . . reveals that in none of them was the legality of intermediate copying at issue”).

70. 10 U.S.P.Q.2d 1177 (N.D. Cal. 1989).

71. *NEC Corp. v. Intel Corp.*, 10 U.S.P.Q.2d 1177, 1186 (N.D. Cal. 1989) (“It should . . . be noted that [NEC’s designer] changed his RESET sequence substantially in writing Rev. 2, which is NEC’s final version of the challenged microcode and thus the only one against which a claim of infringement may be directed.”).

72. 711 F.2d 141, 142 (9th Cir. 1983).

73. *NEC*, 10 U.S.P.Q.2d at 1186–87 (citations omitted).

74. 675 F.2d 498, 501 (2d Cir. 1982).

75. *Eden Toys, Inc. v. Marshall Field & Co.*, 675 F.2d 498, 501 (2d Cir. 1982).

76. 623 F. Supp. 1485 (D. Minn. 1985).

77. *E.F. Johnson Co. v. Uniden Corp. of America*, 623 F.Supp. 1485, 1501 n.17 (D. Minn. 1985); see also Stephen J. Davidson, *Exploring Tensions Between Copyright Law and Competition*, 14 COMPUTER LAW. 1, 6 (1997) (approving of the *Uniden* approach). Compare

The "ends justifies the means" rationale of *NEC* and *E.F. Johnson* departs from the proper analysis established for determining copyright infringement under the Copyright Act. Standard industry practices, found compelling in *E.F. Johnson*, do not trump the reproduction right of the Copyright Act, and the logic employed in *NEC*—"copying [which is] deleted or disguised . . . is not copying"⁷⁸—is simply false on its face. Copying is a violation of the right of reproduction unless the Copyright Act dictates otherwise, and the Copyright Act contains no exception for copying which is deleted or disguised.⁷⁹ Moreover, the cases relied on by the *NEC* court, *Durang* and *Eden Toys* are not on point to the issue of intermediate copying. In both cases, the plaintiff alleged only the commercialized versions of the defendants' works were infringements, and did not challenge the acts of intermediate copying as infringements.⁸⁰ Therefore, these cases do not stand for the proposition that intermediate copying is permissible if the commercialized version of defendant's product is otherwise noninfringing; they simply do not address the issue.

However, these cases should remind practitioners of an important principle: if one wishes to challenge the creation of an intermediate copy as an infringement, one should challenge it as a violation of the reproduction right.⁸¹ If one wishes to additionally challenge the

Davis, *supra* note 11, at 141 ("[m]ost reverse engineering issues arise because the parties or the courts fail to distinguish between the act of reverse engineering and the similarities of expression found in the final work products. The focus must be on the substantial similarity of the expression in the final work, and not the means by which the author got there.") (emphasis omitted), with *Atari Games Corp. v. Nintendo of Am., Inc.*, 975 F.2d 832, 844 (Fed. Cir. 1992). The *Atari* court stated:

The district court assumed that reverse engineering (intermediate copying) was copyright infringement. This court disagrees. Atari did not violate Nintendo's copyright by deprocessing computer chips in Atari's rightful possession. Atari could lawfully deprocess Nintendo's 10NES chips to learn their unprotected ideas and processes. This fair use did not give Atari more than the right to understand the 10NES program and to distinguish the protected from the unprotected elements of the 10NES program. Any copying beyond that necessary to understand the 10NES program was infringement.

Id. (emphasis added). While the emphasized sentences seem contrary to *Sega* and consistent with *NEC* and *Uniden*, a closer analysis of the opinion reveals the court's determination of "no infringement" was coextensive with its finding of fair use. Therefore, the author submits this decision implicitly concludes the intermediate copying was an infringement, but excusable as fair use. See *infra* Part IV.A.

78. *NEC*, 10 U.S.P.Q.2d at 1187 (quoting *Durang*, 711 F.2d at 142).

79. See generally 17 U.S.C. § 106 (1994).

80. See generally *Durang*, 711 F.2d 141; *Eden Toys*, 675 F.2d 498.

81. An interesting question is whether the successful assertion of intermediate copying as an infringement entitles the holder of the right to an *injunction* against the defendant if noninfringing works were created with knowledge gained from the plaintiff's work. The answer to this question starts with § 502(a) of the Copyright Act, which states a court may issue preliminary and permanent injunctions "on such terms as it may deem reasonable to prevent or

commercialization of an end product as an infringement, one should challenge it separately as a violation of the distribution right.

C. *The Inherent Dirtiness of Software "Clean Room" Procedures*

An interesting and related inquiry concerning an intermediate copyist's status as an infringer is the impact of "clean room" procedures. Generally, the clean room procedure is a method of reverse engineering a software program in a manner which purportedly reduces the reverse engineer's copyright liability.⁸² It generally works by splitting reverse engineering efforts between two isolated groups. The first group reverse engineers the program to understand the ideas within, and the second uses those ideas, detailed in a written journal or log, in the development of an

restrain infringement of a copyright." 17 U.S.C. § 502(a) (1994). A recent case interpreting an analogous provision in the patent statute suggests an injunction is proper only to enjoin activities that have infringed a patent or are likely to do so, and an injunction is not proper as either a remedial measure for past infringement or as a punitive measure. See *Johns Hopkins Univ. v. CellPro Inc.*, 152 F.3d 1342, 1366-67 (Fed. Cir. 1998); see also 35 U.S.C. § 283 (1994) (prescribing that courts "may grant injunctions in accordance with the principles of equity to prevent the violation of any right secured by patent, on such terms as the court deems reasonable"). Thus, patent law suggests a court may not enjoin the noninfringing fruits that have stemmed from the intermediate copyist's infringement, and the holder of the right must instead satisfy himself with monetary damages pursuant to § 502(a), under the "prevent or restrain infringement" language of the statute. See 17 U.S.C. § 502(a).

However, not all courts have agreed. For example, the district court in *Sony Computer Entertainment, Inc. v. Connectix Corp.*, in issuing a blanket injunction, reasoned as follows:

While it is undisputed that [Connectix's commercialized end product] does *not* contain any copyrighted material, in a copyright infringement claim based on intermediate infringement, the composition of the end product is not the sole test. The infringing conduct is based on *how* the end product was developed. Here, the evidence is clear that Connectix unlawfully copied and used Sony's BIOS to develop its [end product]. Thus, the only effective remedy for such intermediate infringement is to enjoin the end product. If not, an intermediate infringer could always avoid the consequences of illegal copying and use by editing the protected code out of its final product.

Sony Computer Entertainment, Inc. v. Connectix Corp., 48 F. Supp. 2d 1212, 1224 (N.D. Cal. 1999), *rev'd on other grounds*, 203 F.3d 596 (9th Cir. 2000). In contrast to *Sony Computer*, other courts have suggested only an infringing end product may be enjoined. For example, in *Kepner-Tregoe, Inc. v. Leadership Software, Inc.*, 12 F.3d 527 (5th Cir. 1994), the defendant appealed the district court's order enjoining not only its infringing product, but also "all future modifications and improvements." *Id.* at 538. The Fifth Circuit rejected the latter part of the injunction, reasoning that "the most [the district court] could enjoin were future modifications and improvements of [the defendant's product] that are substantially similar to [the plaintiff's] copyrighted Materials." *Id.*; see also *Sony Computer*, 203 F.3d 596, 608 n.11 (noting, in dictum, intermediate copying did not warrant the issuance of an injunction if the marketed product did not itself constitute an infringement).

82. But see Davis, *supra* note 11, at 151. Cf. *NEC*, 10 U.S.P.Q.2d at 1188 (discussing defendant's use of a clean room procedure to prove that plaintiff's code was dictated by functional concerns and therefore, not protectable under copyright).

end product. The second group has no direct access to the expression embodied in the program examined by the first group.⁸³

This process helps to ensure the end product is sufficiently different to avoid infringement upon the original program.⁸⁴ However, the clean room process does not completely absolve the reverse engineering team from infringement because those in the first group have likely made copies of protectable expression through their decompilation effort.⁸⁵ The first team, like the intermediate copyist more generally, faces "the seemingly impossible task of dealing with a copyrighted work, which he needs to read in order to understand its ideas, but which he cannot read without copying."⁸⁶ Thus, the clean room process is not the panacea some commentators make it out to be.⁸⁷

IV. COPYRIGHT DEFENSES AVAILABLE TO THE INTERMEDIATE COPYIST

Some have argued intermediate copying should not constitute copyright infringement because the copyright policy of idea dissemination will not allow for such a result.⁸⁸ However, to dispose of a claim of infringement on policy grounds is tenuous, especially given the clarity of the exclusive right of reproduction provided by § 106(1).⁸⁹ That clarity means that a software copyright holder can likely establish a *prima facie* case of copyright infringement against the intermediate copyist. Intermediate copyists however, still possess many defenses that can be successful against a copyright infringement claim.

As previously noted, some courts have missed the mark by lumping their sense of fairness and copyright policy into analyses of intermediate

83. Brian C. Behrens & Reuven R. Levary, *Legal Aspects—Software Reverse Engineering and Copyright: Past, Present, and Future*, 31 J. MARSHALL L. REV. 1, 16 (1997); see also *DSC Communications Corp. v. DGI Tech., Inc.*, 898 F. Supp. 1183, 1189 n.3 (N.D. Tex. 1995).

84. See *Mills*, *supra* note 12; see also *supra* notes 12 & 17 and accompanying text.

85. See *Sega*, 977 F.2d at 1526. Use of a clean room procedure would not have absolved the defendant from infringement, because "the use of a clean room would not have avoided the need for disassembly because disassembly was necessary in order to discover the functional specifications for a Genesis-compatible game." *Id.*

86. *Davis*, *supra* note 11, at 152–53.

87. But see Behrens & Levary, *supra* note 83, at 15–16 (concluding the clean room process "ensures clean hands"). However, employment of clean room procedures might inhibit the ability of the copyright holder to seek an injunction, and could also affect the quantum of damages.

88. See *Davis*, *supra* note 11, at 153.

89. See *White-Smith Music Publ'g. Co. v. Apollo Co.*, 209 U.S. 1, 19 (1908) (Holmes, J., concurring) (noting copyright's exclusive rights "hardly can be conceived except as a product of statute").

copyists' infringement. While this approach might lead to a desirable outcome in a given case, it improperly mixes consideration of a plaintiff's prima facie infringement claim and an intermediate copyist's defense, thereby clouding what should be a crisp boundary between the two.⁹⁰ Courts would instead be wise in a typical case to first find infringement of the author's reproduction right under § 106(1) and then proceed to analyze the intermediate copyist's defenses. Some of these defenses are particularly strong in a typical case of intermediate copying.

A. Intermediate Copying of Software Can Be a Fair Use

As previously noted, the Copyright Act does not contain a provision that clearly exempts the intermediate copyist from infringement liability. However, the Copyright Act's "fair use" provision has proven to be an adequate, albeit more vague, substitute. This provision provides "[n]otwithstanding [an author's exclusive rights], the fair use of a copyrighted work . . . for purposes such as criticism, comment, news reporting, teaching . . . , scholarship, or *research*, is not an infringement of copyright," and lists four non-exclusive factors a court should consider in making this determination.⁹¹

The leading case applying fair use in the context of intermediate copying is *Sega Enterprises v. Accolade, Inc.*⁹² In *Sega*, Accolade sought

90. This point was correctly recognized by the district court in *Sony Computer Entertainment, Inc. v. Connectix Corp.*, 48 F. Supp. 2d 1212 (N.D. Cal. 1999), *rev'd on other grounds*, 203 F.3d 596 (9th Cir. 2000):

Connectix argues that it had to copy and run the entire Sony BIOS "to understand" and "to study" the BIOS' functional elements. This argument is misplaced in the present step in the analysis. That is, Connectix' reasons for its copying and use of the Sony BIOS involve an alleged defense, which only becomes relevant in the later "fair use" defense analysis.

Id. at 1218.

91. 17 U.S.C. §107 (1994) (emphasis added). In determining whether the use made of a work in any particular case is a fair use the factors to be considered shall include the following:

(1) the purpose and character of the use, including whether such use is of a commercial nature or is for nonprofit educational purposes; (2) the nature of the copyrighted work; (3) the amount and substantiality of the portion used in relation to the copyrighted work as a whole; and (4) the effect of the use upon the potential market for or value of the copyrighted work.

Id.

92. 977 F.2d 1510 (9th Cir. 1993). However, an important case which preceded *Sega* was *Atari Games Corp. v. Nintendo of Am, Inc.*, 975 F.2d 832 (Fed. Cir. 1992), a case also involving the reverse engineering of games cartridges and assessing intermediate copying as fair use. The *Sega* court was cognizant that the *Atari* court had already addressed the fair use point and noted that *Atari* was "consistent both with our analysis and the result we reach." *Sega Enters. v. Accolade, Inc.*, 977 F.2d 1510, 1514 n.1 (9th Cir. 1992). However, *Atari's* discussion of fair use will not be set forth in this article for two reasons. First, as the *Sega* court made clear, much of its discussion parallels that of the *Atari* court and second, the facts of *Atari* are complicated by the

to make video game cartridges compatible with Sega's game console, and used reverse engineering to discover the elements in the programming necessary to make compatible cartridges.⁹³ In doing so, Accolade disassembled Sega's object code and created copies of the source code. Sega contended the creation of the source code through disassembly constituted infringement. The Ninth Circuit agreed,⁹⁴ but concluded Accolade's intermediate copying was fair use. The court stated:

In light of the public policies underlying the Act, we conclude that, when the person seeking [an understanding of the unprotected functional elements of a program] has a legitimate reason for doing so and when no other means of access to the unprotected elements exists, such disassembly is as a matter of law a fair use of the copyrighted work.⁹⁵

The court determined the first, second and fourth fair use factors weighed in Accolade's favor. With regard to the first factor, the purpose and character of the use, the court paid heed to the principle that copying for a commercial purpose is presumptively not fair.⁹⁶ The court, however, determined because Accolade's use was intermediate—involving only an indirect commercial exploitation of “minimal significance”⁹⁷—this use rebutted the presumption of unfairness. The court considered Accolade's use to be a non-commercially-motivated desire to understand the unprotectable aspects of Sega's game cartridges.⁹⁸ The court further

fact that Atari's counsel procured a copy of Nintendo's program from the Copyright Office through false statements, and Atari thus used an “unauthorized copy” in their reverse engineering efforts. Thus, while Atari's “reverse engineering” process, to the extent untainted by the [copy of Nintendo's software] purloined from the Copyright Office, qualified as fair use . . . [b]ecause Atari was not in authorized possession of the Copyright Office copy of [Nintendo's software], any copying . . . does not qualify as fair use.” *Atari*, 975 F.2d at 843–44 (citing *Harper & Row, Publishers, Inc. v. Nation Enters.*, 471 U.S. 439, 562–63 (1985) for the proposition that “[k]nowing exploitation of [a] purloined manuscript [is] not compatible with ‘good faith’ and ‘fair dealings’ underpinnings of fair use doctrine”).

93. See *Sega*, 977 F.2d at 1514–15.

94. See *id.* at 1518; see also discussion *supra* Part III.B.

95. *Sega*, 977 F.2d at 1514.

96. See *id.* at 1522 (citing *Harper & Row*, 471 U.S. at 562). The Supreme Court has recently retreated from a strict application of this presumption. See *Campbell v. Acuff-Rose Music, Inc.*, 510 U.S. 569, 585 (1994) (stating when evaluating the first factor, courts should undertake a fact-specific analysis rather than “elevating commerciality to hard presumptive significance”); see also *Sony Computer Entertainment, Inc. v. Connectix Corp.*, 203 F.3d 596, 606 (9th Cir. 2000) (“Since *Sega* . . . the Supreme Court has rejected [the commerciality] presumption as applied to the first and fourth factor[s] of the fair use analysis. Instead the fact that Connectix's copying of the Sony BIOS was for a commercial purpose is only a ‘separate factor that tends to weigh against a finding of fair use.’” (citation omitted)).

97. See *Sega*, 977 F.2d at 1522–23.

98. See *id.*

considered Sega's use to provide a public benefit in the dissemination of other creative works, a policy generally fostered by the Copyright Act.⁹⁹

As to the second factor, the nature of the copyrighted work, the court noted computer programs were utilitarian and therefore entitled to less protection than other works, such as works of fiction, whose copyrights are not as thin.¹⁰⁰ The court also found it significant that the unprotectable elements of computer programs cannot feasibly be studied by means other than disassembly, which is not practical without concurrently making a copy of the source code.¹⁰¹

The third factor, the amount of the copyrighted work appropriated, was the only factor the court found to weigh in Sega's favor, because Accolade had disassembled Sega's entire code. However, the court was quick to point out this did not militate against a finding of fair use and carried little weight when the copying was merely intermediate.¹⁰²

As to the fourth factor, the effect of the use on the market for the copyrighted work, the court noted Accolade had not copied Sega's expression and marketed that expression in order to capture Sega's markets. Instead, Accolade was merely attempting to establish itself as a legitimate competitor in the Sega-compatible game cartridge market. Even though Accolade's use indirectly affected the market for Sega-compatible games, Accolade's use would not likely displace Sega's games in the market because players would probably play both Sega's and Accolade's games even if the games dealt with the same general subject matter.¹⁰³ The court also observed Sega's attempt to foreclose competition in the Sega-compatible game market "runs counter to the statutory purpose of promoting creative expression and cannot constitute a strong equitable basis for resisting the invocation of the fair use doctrine."¹⁰⁴

The court, in summary, noted its conclusion concerning fair use was consistent with the copyright policy of idea dissemination and the

99. See *id.* at 1523 (citing *Feist Publications, Inc. v. Rural Tel. Serv. Co.*, 499 U.S. 340 (1991)).

100. See *id.* at 1524; see also *Sony Computer*, 203 F.3d at 603 ("Sony's BIOS lies at a distance from the core [of intended copyright protection] because it contains unprotected aspects that cannot be examined without copying. We consequently accord it a 'lower degree of protection than more traditional literary works.'" (citation omitted)).

101. See *Sega*, 977 F.2d at 1524-26.

102. See *id.* at 1526-27.

103. *Id.* at 1523 (noting "a consumer particularly interested in sports might purchase both Accolade's 'Mike Ditka Power Football' and Sega's 'Joe Montana Football,' particularly if the games are, as Accolade contends, not substantially similar").

104. *Id.* at 1524.

stimulation of "artistic creativity for the general public good."¹⁰⁵ Further, the court found its conclusion particularly sound, in light of the fact that the unprotectable elements buttressing Sega's protectable expression were not readily observable without engaging in reverse engineering. Therefore, according to the court, a failure to find fair use would erroneously give Sega a "*de facto* monopoly over those ideas and functional concepts"¹⁰⁶ the Copyright Act relegates to the public domain.

The Ninth Circuit has recently reaffirmed the holding of *Sega* in *Sony Computer Entertainment, Inc. v. Connectix Corp.*¹⁰⁷ As noted previously in connection with an analysis of the district court's infringement determination,¹⁰⁸ defendant Connectix built an emulator that allowed its customers to play Sony's video game cartridges on their personal computers.¹⁰⁹ To build the emulator, Connectix had to make a copy of the BIOS software in Sony's PlayStation game console.¹¹⁰ Sony alleged the intermediate copying of its BIOS code was an infringement and requested a preliminary injunction.¹¹¹ The district court granted the preliminary injunction, but the Ninth Circuit reversed the district court on the ground the intermediate copying constituted a fair use under *Sega*.

The Ninth Circuit's fair use analysis in *Sony Computer* largely parallels that of *Sega*. However, the analysis was updated to take into account whether the intermediate copying gave rise to a new work that was "transformative," i.e., whether the new work "merely supercedes the objects of the original creation or instead adds something new, with a further purpose or different character, altering the first with new expression, meaning, or message."¹¹² The *Sony Computer* court considered Connectix's virtual game station to be "modestly transformative" because it offered a new platform on which to play Sony's games, and more importantly because it constituted a "wholly new product" when compared with anything Sony had manufactured.¹¹³ The transformative nature of Connectix's copying worked in Connectix's favor in the court's assessment of the first and fourth statutory factors—the purpose and character of

105. *Id.* at 1527 (quoting *Sony Corp. v. Universal City Studios, Inc.* 464 U.S. 417, 432 (1984)).

106. *Id.*

107. 203 F.3d 596 (9th Cir. 2000).

108. *See supra* Part III.A.

109. *Sony Computer*, 203 F.3d 596, 598 (9th Cir. 2000).

110. *See id.*

111. *See id.*

112. *See id.* at 606 (quoting *Campbell v. Acuff-Rose Music, Inc.*, 510 U.S. 569, 579 (1994)).

113. *See id.*

Connectix's use of Sony's software and the effect of the use upon Sony's potential market.¹¹⁴

As in *Sega*, the *Sony Computer* court recognized the heart of the case concerned the right of Connectix to learn from those aspects of Sony's software beyond the ambit of copyright and which could not be discovered through means other than copying.¹¹⁵ The court thus held that Connectix's intermediate copying of Sony's BIOS software constituted fair use as a matter of law, and admonished Sony that if it wished "to obtain a lawful monopoly on the functional concepts in its software, it must satisfy the more stringent standards of the patent laws."¹¹⁶

Sega and *Sony Computer* provide powerful protection for the intermediate copyist. The intermediate copyist, by definition, embarks on copying for the purpose of understanding and utilizing a program's unprotectable elements—a "legitimate reason" under *Sega*. Furthermore, the intermediate copyist usually must copy and disassemble a protected software work in order to gain access to its unprotected elements. Under these typical circumstances, fair use attaches as a matter of law, at least in the Ninth Circuit.¹¹⁷

Because fair use operates as an "equitable rule of reason,"¹¹⁸ it is difficult to predict how a court will apply it in a given case of intermediate copying. However, several generalizations can be drawn from *Sega*, *Sony Computer* and other cases that flesh out the scope of fair use. First, if the intermediate copyist's use is highly transformative because it gives rise to new expression that enriches the public,¹¹⁹ it will more likely rebut the presumption of unfairness raised by the commercial motives of the intermediate copyist.¹²⁰ Thus, the intermediate copyist, by virtue of the creation of a new work not substantially similar to the copied work, is more likely to find solace in fair use than will infringers whose works incorporate substantial amounts of protected expression¹²¹ or whose use of

114. See *id.* at 606-09. Concerning the fourth statutory factor, the court noted "[w]hereas a work that merely supplants or supercedes another is likely to cause a substantially adverse impact on the potential market of the original, a transformative work is less likely to do so." *Id.* at 607.

115. See *id.* at 602.

116. *Id.* at 605.

117. See *supra* note 95 and accompanying text.

118. H.R. REP. NO. 94-1476, at 65 (1976).

119. See generally *Campbell*, 510 U.S. at 579 (noting "the goal of copyright, to promote science and the arts, is generally furthered by the creation of transformative works.").

120. See *id.*

121. See *Atari*, 975 F.2d at 843 ("Subparagraphs 1 and 4 of section 107 clarify the fair use in intermediate copying does not extend to commercial exploitation of protected expression."); Davidson, *supra* note 77, at 6 ("There is a significant difference between the copying of creative

another's software is not used in the creation of a new work.¹²² Second, courts will be reluctant to find fair use if the intermediate copyist has engaged in bad faith, for example, by procuring a copy of the protected work through illegal or unfair means.¹²³ Third, while the application of fair use presupposes the appropriation of some protected expression, appropriation of a software work whose protection is thin will more strongly favor a finding of fair use.¹²⁴ Fourth, fair use is more likely to attach if the intermediate copyist labors to achieve interoperability with another software product and if achieving such interoperability is not practical through other means.¹²⁵

expression of a copyrighted work for the purpose of having that precise form of *expression* advance someone else's commercial interests and copying for the purpose of using the *content* of the work to advance that person's commercial interests. The latter is recognized as being much more conducive to fair use." (citing *Consumers Union of United States, Inc. v. General Signal Corp.*, 724 F.2d 1044, 1049 (2d Cir. 1983)).

122. In *Triad Sys. Corp. v. Southeastern Express Co.*, 64 F.3d 1330 (9th Cir. 1995), the Ninth Circuit determined copying the plaintiff's software into RAM by an organization that serviced the plaintiff's computers was not a fair use. The court distinguished its decision in *Sega* on the basis here defendant Southeastern created nothing of its own. *Id.* at 1336. "Southeastern is simply commandeering its customers' software and using it for the very purpose for which, and in precisely the manner in which, it was designed to be used." *Id.* at 1337. Likewise, the Federal Circuit in *DSC Communications Corp. v. Pulse Communications, Inc.*, 170 F.3d 1354 (Fed. Cir. 1999), in discussing the dismissal of defendant Pulsecom's fair use defense, concluded defendant's use of the plaintiff's work was not to discover how the product operated but "merely to demonstrate the interchangeability" of defendant's product with plaintiff's. *Pulse Communications*, 170 F.3d at 1363; *see also Compaq Computer Corp. v. Procom Tech., Inc.*, 908 F. Supp. 1409, 1420 (S.D. Tex. 1995).

In contrast, Procom's use of Compaq's threshold values was not an intermediate use, intended to facilitate the study of functional aspects of CIM. As in *Sega*, Procom made a verbatim copy of the copyrighted material. However, Procom never used the copy to develop its own, noninfringing product. Instead Procom simply reproduced the copied data onto its own drives to achieve interoperability. In addition, Procom, unlike Accolade, avoided performing its own creative work by simply copying the material from Compaq. Under the logic of *Sega*, the court should focus on the particular use of the copied material. Accordingly, the first statutory factor weighs in favor of Compaq because the particular use was also the ultimate use and the ultimate use was clearly commercial.

Id.

123. *See Atari*, 975 F.2d at 843; *see also supra* note 92; *Harper & Row*, 471 U.S. at 562 ("Fair use presupposes 'good faith' and 'fair dealing.'" (citations and quotations omitted)).

124. *See Sega*, 977 F.2d at 1524.

125. EC Directive on the Protection of Computer Software, art. 6 (1992) [hereinafter *Accord Directive*]. The Accord Directive allows "decompilation" under the following circumstances: "where . . . reproduction of the code and translation of its form . . . are indispensable to obtain necessary information to achieve the interoperability of an independently created program with other programs." *Id.* "Interoperability" is defined as "the ability to exchange information and mutually to use the information which has been exchanged." Davis, *supra* note 11, at 149 (noting the EC Software Directive's use of the terms "decompilation" is misleading, because "it purports to describe a process that does not exist") "There is presently no known way to decompile a program." *Id.* Instead, Davis asserts the EEC Directive intends to

*B. Those Who Assert Their Software Copyrights Against Intermediate Copyists Can Be Misusers*¹²⁶

A copyright holder who wishes to sue an intermediate copyist should be especially careful not to overstep the bounds of his copyright or the holder may find the suit jeopardized by a finding of misuse. Misuse,¹²⁷ a judicial doctrine, arises when a holder of an intellectual property right uses that right to obtain or coerce an unfair commercial advantage beyond the scope of the right.¹²⁸ If the alleged infringer is able to show misuse, the right is held unenforceable until the anticompetitive effect of the misuse has been purged.¹²⁹

One of the leading cases prescribing the scope of the misuse doctrine is *Morton Salt Co. v. G.S. Suppiger Co.*¹³⁰ In that case, patentee Morton

cover "disassembly," and the term "decompilation" arose from the translation of the Directive from French to English. *Id.*

126. Activities that give rise to a misuse defense can also act as a predicate for an antitrust counterclaim by the alleged infringer. In this sense, an antitrust counterclaim, with its threat of treble damages, can also be an important defensive measure for the intermediate copyist to employ, even though it requires proof beyond the misuse. See *Spectrum Sports, Inc. v. McQuillan*, 506 U.S. 447, 456 (1993) ("Consistent with our cases, it is generally required that to demonstrate attempted monopolization a plaintiff must prove (1) that the defendant has engaged in predatory or anticompetitive conduct with (2) a specific intent to monopolize and (3) a dangerous probability of achieving monopoly power."). However, this "defense" is not addressed in this article because it is beyond its scope. For other articles discussing antitrust in the reverse engineering context, see David McGowan, *Regulating Competition in the Information Age: Computer Software as an Essential Facility Under the Sherman Act*, 18 HASTINGS COMM. & ENT. L.J. 771 (1996); Robert H. Lande & Sturgis M. Sobin, *Reverse Engineering of Computer Software and U.S. Antitrust Law*, 9 HARV. J.L. & TECH. 237 (1996). See generally *Lasercomb Am. Inc. v. Reynolds*, 911 F.2d 970, 977-78 (4th Cir. 1990) (discussing the differences between copyright misuse and antitrust).

127. See *DSC Communications Corp. v. Pulse Communications, Inc.*, 170 F.3d 1354, 1368 (Fed. Cir. 1999) ("Copyright misuse is a defense to a claim of copyright infringement.").

128. See, e.g., *Alcatel U.S.A., Inc. v. DGI Tech., Inc.*, 166 F.3d 772, 792 (5th Cir. 1999); *C.R. Bard, Inc. v. M3 Sys., Inc.*, 157 F.3d 1340, 1372 (Fed. Cir. 1998) (discussing misuse in the patent context). It should be noted the patent law contains certain statutory exceptions to misuse. See 35 U.S.C. § 271(d) (1994).

129. See *Morton Salt Co. v. G.S. Suppiger Co.*, 314 U.S. 488, 493 (1942) (noting a misuser cannot sue for infringement of its patent "until it is made to appear that the improper practice has been abandoned and that the consequences of the misuse of the patent have been dissipated"); *Practice Mgmt. Info. Corp. v. American Med. Ass'n.*, 121 F.3d 516, 520 n.9 (9th Cir. 1997) ("Copyright misuse does not invalidate a copyright, but precludes its enforcement during the period of misuse."); *C.R. Bard*, 157 F.3d at 1372.

130. 314 U.S. 488 (1942); see also *Dawson Chem. Co. v. Rohm & Haas Co.*, 448 U.S. 176, 224-30 (1980) (White, J., dissenting) (discussing the development of the misuse doctrine and citing *Mercoid Corp. v. Minneapolis-Honeywell Regulator Co.*, 320 U.S. 680 (1944) [hereinafter *Mercoid II*], *Mercoid Corp. v. Mid-Continent Inv. Co.*, 320 U.S. 661 (1944) [hereinafter *Mercoid I*], *B.B. Chem. Co. v. Ellis*, 314 U.S. 488 (1942) (*Morton Salt's* companion case), *Leitch Mfg. Co. v. Barber Co.*, 302 U.S. 458 (1938), *Carbice Corp. v. American Patents*

Salt entered into license agreements that required the licensees of its salt dispensing machines to buy only Morton's unpatented salt tablets. When Morton Salt sued G.S. Suppiger for infringement of its patent, the Court was forced to grapple with the question of "whether a court of equity [would] lend its aid to protect the patent monopoly when [Morton Salt] [was] using it as a means of restraining competition with its sale of an unpatented article."¹³¹ The Supreme Court answered the question in the negative, dismissed the suit, and noted where a patent is used to restrain competition with an unpatented product, it undermines the "public policy underlying the grant of the patent."¹³² It was irrelevant to the Court's holding G.S. Suppiger was not harmed by the misuse¹³³ or a violation of the antitrust laws was not shown.¹³⁴

Although the Court hinted the same rules would apply in the Copyright context,¹³⁵ subsequent case law applying copyright misuse [was] sparse¹³⁶ until the Fourth Circuit decided *Lasercomb America, Inc. v. Reynolds*,¹³⁷ in 1990. In *Lasercomb*, the defendant, a licensee of plaintiff's copyrighted software, made and distributed copies of the software in violation of its license. Despite its obvious infringement, the defendant asserted that plaintiff misused its copyright by including terms in its licenses that precluded its licensees from creating software which competed with the plaintiff's for the next 100 years. The Fourth Circuit agreed and concluded the plaintiff's licensing provisions "control[led] competition in an area outside [of its] copyright,"¹³⁸ which was contrary to public policies underlying copyright law.

Dev. Corp., 283 U.S. 27 (1931), *Motion Picture Patents Co. v. Universal Film Mfg.*, 243 U.S. 502 (1917)).

131. *Morton Salt*, 314 U.S. at 490.

132. *Id.* at 493; see also *Practice Mgmt.*, 121 F.3d at 520 ("[W]e conclude the AMA misused its copyright by licensing the CPT to HCFA in exchange for HCFA's agreement not to use a competing coding system.").

133. See *Morton Salt*, 314 U.S. at 494 ("It is the adverse effect upon the public interest of a successful infringement suit in conjunction with the patentee's course of conduct which disqualifies him to maintain the suit, regardless of whether the particular defendant has suffered from the misuse of the patent.").

134. See *id.* ("It is unnecessary to decide whether respondent has violated the Clayton Act, for we conclude that in any event the maintenance of the present suit to restrain petitioner's manufacture or sale of the alleged infringing machines is contrary to public policy and that the district court rightly dismissed the complaint for want of equity.").

135. See *id.* (citing cases noting the "application of the like doctrine in the case of copyright").

136. See generally *M. Witmark & Sons v. Jensen*, 80 F. Supp. 843 (D. Minn. 1948) (finding copyright misuse).

137. 911 F.2d 970 (4th Cir. 1990).

138. *Lasercomb Am., Inc. v. Reynolds*, 911 F.2d 970, 979 (4th Cir. 1990).

Lasercomb paved the way for *DSC Communications Corp. v. DGI Technologies, Inc.*,¹³⁹ an important case applying copyright misuse principles in the intermediate copying context. In *DSC Communications*, DGI wished to manufacture microprocessor cards that could be used in DSC's telephone switching system. To do so, DGI needed to download DSC's operating system software into the RAM memory on its cards to verify their compatibility with DSC's system. DGI accomplished this necessary testing by entering into an agreement with NTS, a purchaser of DSC's switching equipment and licensee of DSC's software.¹⁴⁰ DSC asserted the testing arrangement was beyond the scope of its license with NTS, which prohibited using licensed software with hardware not manufactured by DSC, and thus constituted copyright infringement.¹⁴¹ Citing *Lasercomb* and *Morton Salt* as authority, the Fifth Circuit suggested DSC was likely guilty of misuse, having endeavored to use its copyright to obtain "patent-like monopoly over unpatented microprocessor cards."¹⁴² The court thus refused to expand the limited preliminary injunction entered by the district court.¹⁴³ In support of its conclusion, the court noted:

Any competing microprocessor card developed for use on DSC phone switches must be compatible with DSC's copyrighted operating system software. In order to ensure that its card is compatible, a competitor such as DGI must test the card on a DSC phone switch. Such a test necessarily involves making a copy of DSC's copyrighted operating system, which copy is downloaded into the card's memory when the card is booted up. If DSC is allowed to prevent such copying, then it can prevent anyone from developing a competing microprocessor card, even though it has not patented the card. The defense of copyright misuse forbids the use of the copyright to secure an exclusive right or limited monopoly not granted by the [copyright law], including a limited monopoly over microprocessor cards.¹⁴⁴

139. 81 F.3d 597 (5th Cir. 1996).

140. In exchange for allowing DGI to test its cards, DGI promised to give NTS a ten percent discount in its cards once they were developed. *DSC Communications Corp. v. DGI Technologies, Inc.*, 81 F.3d 597, 599 (5th Cir. 1996).

141. See *id.* at 597-600.

142. *Id.*

143. See *id.* at 599-600 (indicating under the district court's injunction, "DGI could not continue to make copies of the operating system to take back to its lab and study, but it could test its microprocessor card on [the third party's] phone switch, even though DSC's operating system software would be downloaded into the microprocessor card's RAM.").

144. *Id.* at 601.

On appeal, after remand, the Fifth Circuit reaffirmed its previous reasoning concerning misuse, and held a permanent injunction could not be entered against DGI.¹⁴⁵

Other appellate cases addressing the propriety of intermediate copying further illustrate the operation of copyright misuse in this context. For example, in *Sega Enterprises v. Accolade, Inc.*,¹⁴⁶ the Ninth Circuit hinted at possible misuse implications. In discussing the fourth fair use factor, the court found Sega's "attempt to monopolize the market by making it impossible for others to compete runs counter to the statutory purpose of promoting creative expression and cannot constitute a strong equitable basis for resisting the invocation of the fair use doctrine."¹⁴⁷ Under the second fair use factor, the court expressed concern because unprotectable elements of Sega's program could only be investigated through disassembly. The court noted if disassembly was considered per se unfair, the copyright owner would in effect gain a monopoly over the functional aspects of his work, which were only properly protected under patent law.¹⁴⁸ Thus, inasmuch as Sega's complaint attempted to control activities beyond the scope of its copyright, its infringement allegations ostensibly could have been successfully rebutted by a misuse defense.

A circuit split exists on the question whether a defendant asserting the equitable defense of copyright misuse must come to court with clean hands. This issue usually arises when the intermediate copyist procured a copy of plaintiff's work by questionable means.¹⁴⁹ At one end of the spectrum is the Federal Circuit's ruling in *Atari Games Corp. v. Nintendo of America, Inc.*¹⁵⁰ In *Atari*, the Federal Circuit entertained Atari's assertion that Nintendo's copyright licenses, which purported to give Nintendo effective control over independent works created by licensees, constituted misuse.¹⁵¹ Noting Atari purloined a copy of Nintendo's program through misrepresentations to the Copyright Office, the court denied Atari entitlement to the defense.¹⁵² Because the defense was an equitable doctrine, Atari needed 'clean hands'.¹⁵³

145. See *Alcatel U.S.A., Inc. v. DGI Tech., Inc.*, 166 F.3d 772, 794 (5th Cir. 1999).

146. *Sega Enters. v. Accolade, Inc.*, 977 F.2d 1510 (9th Cir. 1993).

147. *Id.* at 1523-24.

148. See *id.* at 1526; see also *Sony Computer Entertainment, Inc. v. Connectix Corp.*, 203 F.3d 596, 605 (9th Cir. 2000) (noting patent law, not copyright law, was the proper vehicle for obtaining a "lawful monopoly on the functional concepts" embodied in software).

149. See, e.g., *Atari Games Corp. v. Nintendo of Am., Inc.*, 975 F.2d 832 (Fed. Cir. 1992).

150. 975 F.2d 832 (Fed. Cir. 1992).

151. See *Atari Games*, 975 F.2d 846.

152. See *id.*

153. See *id.*

The Fifth Circuit took a different approach in *Alcatel U.S.A., Inc. v. DGI Technologies, Inc.*¹⁵⁴ In *Alcatel*, the post-trial sequel to *DSC*, the Fifth Circuit concluded DGI could assert a misuse defense even though DGI had unclean hands. The court distinguished *Atari* and other cases as “unpersuasive.”¹⁵⁵

Under normal circumstances, copyright misuse has special potency with respect to computer software copyrights, especially in the intermediate copying context. As noted above, computer software is utilitarian and generally contains an intermingling of expression and other non-protectable elements. A copyright holder waiting to sue an intermediate copyist is in a dilemma because the copyright only extends to expression. A copyright holder must be careful to couch the complaint in such a way that does not effectively proscribe conduct beyond the scope of copyright. This becomes difficult when the intermediate copyist copies software in pursuit of legal endeavors such as understanding a program’s unprotectable features. Copyright holders should also scour their existing licensing agreements to ensure they do not include terms that overstep bounds of the rights afforded by copyright.¹⁵⁶

To make matters worse for the copyright holder, case law from the patent arena suggests limiting reverse engineering by license could constitute misuse as well.¹⁵⁷ In *Mallinckrodt, Inc. v. Medipart, Inc.*,¹⁵⁸ a patent holder stamped his patented medical device “for single use only.”¹⁵⁹ The defendant collected and refurbished spent devices and sold them. The patentee sued the defendant for inducement of infringement, asserting the use restriction constituted a “label license.”¹⁶⁰ The defendant countered, asserting the use restriction constituted misuse. The Federal Circuit concluded the enforceability of the licensing restriction would be judged

154. 166 F.3d 772 (5th Cir. 1999).

155. *Alcatel U.S.A.*, 166 F.3d at 794–95. Among those “unpersuasive” cases was *Data Gen. Corp. v. Grumman Sys. Support Corp.*, 36 F.3d 1147 (1st Cir. 1994). “[I]f copyright misuse is an equitable defense, a defendant that has itself acted inequitably may not be entitled to raise such a defense.” *Id.* at 1170 n.43; see also 4 MELVILLE B. NIMMER & DAVID NIMMER, NIMMER ON COPYRIGHT § 13.09[B], at 13-295 (1999) (suggesting the defense of unclean hands should possibly be denied “when the defendant has been guilty of conduct more unconscionable and unworthy than the plaintiff’s”).

156. See *DSC Communications Corp. v. Pulse Communications, Inc.*, 976 F. Supp. 359, 363 (E.D. Va. 1997) (involving a claim by DSC that its software license agreements with its customers prohibited downloading the software into cards that were not made or licensed by DSC).

157. For more about licensing restrictions against reverse engineering of software, see *infra* Part V.

158. 976 F.2d 700 (Fed. Cir. 1992).

159. *Mallinckrodt, Inc. v. Medipart, Inc.*, 976 F.2d 700, 701 (Fed. Cir. 1992).

160. See *id.* at 703.

according to the rule of reason.¹⁶¹ A misuse defense required a factual determination the "overall effect of the license tends to restrain competition unlawfully in an appropriately defined relevant market."¹⁶² A misuse would have occurred, the court continued, if the patent holder had gone beyond the patent and "into behavior having an anticompetitive effect not justifiable under the rule of reason."¹⁶³ The court reversed the summary judgment granted in favor of the defendant and remanded the case to the district court to make this determination in the first instance.¹⁶⁴

Because licensing restrictions prohibiting reverse engineering are not per se illegal, their enforceability is presumably governed according to the rule of reason under *Mallinckrodt*. If the copyright holder cannot establish a legitimate reason for the prohibition against reverse engineering, the infringement suit might be jeopardized as an anticompetitive attempt to prohibit development of new software products.

To summarize, there are several ways a copyright holder could be deemed to have misused the copyright in the context of intermediate copying. This defense will certainly become commonly asserted in such suits in the future.

C. Section 117: A Safe-Haven for the Intermediate Copyist?

Section 117 of the Copyright Act seems to provide an intermediate copyist with refuge from liability. The section provides in relevant part:

[I]t is not an infringement for the owner of a copy of a computer program to make . . . another copy . . . of that computer program provided:

(1) that such a new copy . . . is created as an essential step in the utilization of the computer program in conjunction with a machine and that it is used in no other manner

(2) that such new copy . . . is for archival purposes only¹⁶⁵

An intermediate copy is not made for archival purposes, but is it "created as an essential step in the utilization of the computer program?"¹⁶⁶ It is useful to turn to the legislative history of § 117 to attempt to answer this question. Courts have generally treated CONTU's Final Report as

161. *See id.*

162. *Id.* at 706.

163. *Id.* at 708.

164. *See id.* at 709.

165. 17 U.S.C. § 117 (1994).

166. *Id.*

reflecting Congressional intent because the legislative history of § 117 demonstrates an intent to incorporate CONTU's conclusions.¹⁶⁷ This report provides in relevant part:

One who rightfully possesses a copy of a program . . . should be provided with a legal right to copy it to the extent which will permit its use by that possessor. This would include the right to load it into a computer and to prepare archival copies of it to guard against destruction or damage But this permission would not extend to other copies of the program.¹⁶⁸

CONTU's Final Report thus recognizes certain copies which are necessarily incident to the use of the program, such as intracomputer copies generated by use or archival copies, are exempt from infringement.¹⁶⁹

However, an intermediate copy generated during reverse engineering is neither an intracomputer copy nor an archival copy. Instead, the use of an intermediate copy seems to be precluded by the "use in no other manner" language of the statute, and there is no support in CONTU's Final Report to the contrary.¹⁷⁰ To summarize, the CONTU Final Report does not support the proposition that an intermediate copy constitutes a copy made "as an essential step in the utilization of the computer program." Indeed, CONTU's conclusion that computer software should enjoy copyright protection¹⁷¹ supports the proposition that the excepted uses of § 117 should not be read broadly.

Despite CONTU's ostensibly clear intention, the circuit courts are split on whether § 117 shelters the intermediate copyist from liability. In *Vault Corp. v. Quaid Software Ltd.*,¹⁷² defendant Quaid purchased a copy of Vault's anti-copying software and studied it to create a program to

167. See *Vault Corp. v. Quaid Software Ltd.*, 847 F.2d 255, 260-61 (5th Cir. 1988) ("The Act's legislative history, contained in a short paragraph in a committee report, merely states that the Act, 'embodies the recommendations of [the CONTU] with respect to clarifying the law of copyright of computer software.' The absence of an extensive legislative history and the fact that Congress enacted proposed section 117 with only one change have prompted courts to rely on the CONTU Report as an expression of legislative intent." (citations and footnote omitted)).

168. NATIONAL COMMISSION ON NEW TECHNOLOGICAL USES OF COPYRIGHTED WORKS, FINAL REPORT 13 (Dept. of Commerce, July 31, 1978) [hereinafter CONTU FINAL REPORT].

169. See *id.* In enacting the new § 117, Congress adopted the proposed section with only one change. The final version grants 'owners,' as opposed to 'rightful possessors,' a limited right to copy and adapt their software. *DSC Communications Corp. v. Pulse Communications*, 170 F.3d 1354, 1360 (Fed. Cir. 1999).

170. See generally CONTU FINAL REPORT; *Pulse Communications*, 170 F.3d at 1359.

171. See CONTU FINAL REPORT at 11 ("The cost of developing computer programs is far greater than the cost of their duplication . . . [S]ome form of protection is necessary to encourage the creation and broad distribution of computer programs in a competitive market.").

172. 847 F.2d 255 (5th Cir. 1988).

defeat the operation of Vault's software. Quaid loaded Vault's program into the RAM on its computer, an act which Vault asserted was infringement. The Fifth Circuit disagreed, and concluded § 117 protected Quaid's activities even though Quaid's copy of Vault's program was made expressly to devise a means of defeating its protective function.¹⁷³ The court determined the copy made by Quaid was "created as an essential step in the utilization" of Vault's program.¹⁷⁴ The court declined to accept Vault's argument the "use[] in no other manner" language in § 117 warranted an interpretation that would "permit only the copying of a computer program for the purpose of using it for its intended purpose."¹⁷⁵ The *Vault* decision has been sharply criticized as an overbroad reading of § 117(1)'s use exception.¹⁷⁶

By contrast, the Ninth Circuit in *Sega* discounted Accolade's arguments that its intermediate copy was entitled to § 117 protection, and noted "it [was] clear that Accolade's use went far beyond that contemplated by CONTU and authorized by section 117."¹⁷⁷ According to the court, "[s]ection 117 does not . . . protect a user who disassembles object code, converts it from assembly into source code, and makes printouts and photocopies of the refined source code version."¹⁷⁸

An interesting case from the Federal Circuit may influence the interpretation given to § 117 in the context of intermediate copying of software. In *DSC Communications Corp. v. Pulse Communications, Inc.*,¹⁷⁹ defendant Pulse manufactured cards for use in DSC's switching system, which it tested on a DSC system it procured on the open market.¹⁸⁰

173. *Vault Corp. v. Quaid Software Ltd.*, 847 F.2d 255, 261 (5th Cir. 1988).

174. *Id.*

175. *Id.*; see also *Sega*, 977 F.2d at 1520 n.6 (declining to address this issue).

176. See JOYCE, *supra* note 40, at 468 (describing *Vault* as an "expanded (if not exploded)" reading of § 117(1)'s utilization exception to copyright infringement).

177. *Sega*, 977 F.2d at 1520.

178. *Id.*; see also *Sony Computer Entertainment, Inc. v. Connectix Corp.*, 203 F.3d 596 (9th Cir. 2000) (citing *Sega*); *Apple Computer, Inc. v. Formula Int'l, Inc.*, 594 F. Supp. 617, 621 (C.D. Cal. 1984) (taking a narrow view of what constitutes permissible use under § 117 after reviewing the CONTU Final Report); cf. *Hubco Data Prods. Corp. v. Management Assistance, Inc.*, 219 U.S.P.Q. 450, 456 (D. Idaho 1983) (inferring § 117 does not provide protection for the intermediate copyist).

179. 170 F.3d 1354 (Fed. Cir. 1999).

180. See *Pulse Communications*, 170 F.3d at 1363. Pulse also tested its cards on the DSC systems of other third parties, and DSC asserted this activity constituted contributory infringement. The district court disagreed, and concluded § 117 insulated the third parties (and therefore, Pulse) from infringement. The court first opined the "trend is to read Section 117 broadly," (citation omitted), and because the third parties were "owners" of copies of DSC's software they were entitled to download the software into Pulse's cards as an "essential step" in the utilization of the program. *Pulse Communications*, 976 F. Supp. at 362-63. The Federal

DSC asserted Pulse infringed its software copyright when the software in DSC's system was downloaded into Pulse's cards during the testing procedure.¹⁸¹ The Federal Circuit concluded, without discussion, Pulse was "entitled, under 17 U.S.C. § 117, to make such copies of the . . . [software] as were necessary to operate the system."¹⁸² It is worth noting, *Pulse Communications* does not present the type of intermediate copying that has been the focus of this Article. The copying was not made for the purposes of understanding the unprotectable elements therein and designing a new piece of software, but rather to test the compatibility of Pulse's hardware with DSC's. However, the Federal Circuit's cursory conclusion that Pulse's "non-standard" use of DSC's software was entitled to § 117 protection may influence a conclusion that *any* use of software, including intermediate copying, is similarly protected.

Thus, whether intermediate copying comes within the scope of § 117 is not well-settled in the circuit courts. While CONTU's Final Report suggests intermediate copies are not one of the narrow categories of copies protectable under § 117, an intermediate copyist will argue to the contrary and may be successful outside of the Ninth Circuit.

V. THE IMPACT OF LICENSE RESTRICTIONS

Software is generally not sold but licensed to end users.¹⁸³ This is usually accomplished by a "shrinkwrap" license in which the end user is deemed to manifest assent to the licensing terms printed on the software's packaging by removing its plastic (shrinkwrap).¹⁸⁴ Because of the

Circuit reversed and remanded this determination on the ground that the third parties were not "owners," but mere licensees, of the software and therefore not entitled to the protection of § 117. See *Pulse Communications*, 170 F.3d at 1362.

181. See *Pulse Communications*, 170 F.3d at 1363. DSC also asserted Pulse directly infringed when it created copies on the systems of the third parties. The Federal Circuit, relying on its resolution of DSC's contributory infringement claim also remanded for a determination of DSC's direct liability. See *id.* at 1362-63; *supra* note 180.

182. *Pulse Communications*, 170 F.3d at 1363.

183. See Leonard T. Nuara, *Software Litigation and Software Licensing: Don't Draw, Draft!*, 9 J. PROPRIETARY RTS. 15, 17 (1997). The purpose of licensing software, as opposed to selling it, is to avoid the First Sale doctrine which allows buyers to freely resell, copy or otherwise dispose of purchased software. A license, by its terms, can limit the ability of a licensee to engage in such activity, thereby increasing the licensor's control over disposition of its products. See Darren C. Baker, *ProCD v. Zeidenberg: Commercial Reality, Flexibility in Contract Formation, and Notions of Manifested Assent in the Arena of Shrinkwrap Licenses*, 92 NW. U. L. REV. 379, 393 (1997) [hereinafter *ProCD Note*]; see also *Microsoft Corp. v. Harmony Computers & Elecs., Inc.*, 846 F. Supp. 208 (E.D.N.Y. 1994).

184. See Note, *Shrinkwrap Licenses: Consequences of Breaking the Seal*, 71 ST. JOHN'S L. REV. 839, 839-41 (1997) [hereinafter *Breaking the Seal*].

copyright holder's desire to retain some degree of control over the use of the work, shrinkwrap licenses typically prohibit reverse engineering as a permissible use.¹⁸⁵ Accordingly, the intermediate copyist might be liable for copyright infringement because the creation of an intermediate copy is generally outside the scope of the license.¹⁸⁶

The copyright holder can alternatively sue for breach of the shrinkwrap license.¹⁸⁷ The question then arises whether copyright defenses, including fair use, misuse and perhaps § 117, can be nullified if the copyright holder asserts a breach of license claim instead of a copyright infringement claim. The answer to this question is unclear¹⁸⁸ and turns on the resolution of two issues, the extent to which shrinkwrap licenses are enforceable and the extent to which a cause of action for breach of license is preempted by the copyright laws.

A. Enforceability of Shrinkwrap Licenses Under State Law:

Courts assessing the enforceability of shrinkwrap licenses have been divided. Some courts have held shrinkwrap licenses are unenforceable as

Purchasers of mass produced software encounter shrinkwrap licenses as the list of fine print terms expressed in complicated legalese which the user is expected to read (though more likely will ignore) prior to using the product. Often, the terms are printed on an envelope within the actual purchased package which contains the software diskettes. The user may constructively assent to these terms by opening the flap of the envelope. Another way a purchaser can consent to the licensing terms is by breaking a plastic seal which tightly fits the software package, hence the name "shrinkwrap."

Id.; see also *Novell, Inc. v. Network Trade Ctr. Inc.*, 25 F. Supp. 2d 1218, 1230 n.16 (D. Utah 1997). A type of shrinkwrap license that is becoming more common is the "clickwrap license," in which the licensee manifests his assent to the license terms by clicking a button on the computer screen prior to accessing the licensed work. See generally *Stomp, Inc. v. Neato, LLC*, 61 F. Supp. 2d 1074, 1080–81 n.11 (C.D. Cal. 1999).

185. See *ProCD Note*, *supra* note 183, at 391 (noting the following typical software shrinkwrap license terms: "(1) a statement of proprietary rights and prohibition against unauthorized copies, (2) prohibition of rental of the software, (3) prohibition on reverse engineering and modifications to the software, (4) restrictions regarding permissible use of the software, (5) disclaimer of warranties, and (6) limitation of liability." (emphasis added)).

186. See *Gilliam v. American Broad. Cos.*, 538 F.2d 14, 20 (2d Cir. 1976).

187. See *Arthur Young & Co. v. City of Richmond*, 895 F.2d 967–68 (4th Cir. 1990). This assumes the license is not a mere license, but also includes an express promise by the licensee not to engage in activity beyond the scope of the license. Cf. *Eli Lilly & Co. v. Genentech, Inc.*, 17 U.S.P.Q.2d 1531, 1534–35 (S.D. Ind. 1990). A license is merely a promise not to sue for infringement. Therefore, activity beyond the scope of the license is not actionable as a breach of contract, absent a promise by the licensee not to engage in such activities. Such a promise will usually not be implied. See *id.*

188. See *Davidson*, *supra* note 77, at 7 ("[I]t is not yet clear whether a contractual prohibition against reverse engineering (such as commonly appears in modern software license agreements) is a lawful and enforceable method of preventing such activity.").

contracts of adhesion.¹⁸⁹ One court has held shrinkwrap licenses are attempted "material alterations" to the terms of licenses formed upon party performance under section 2-207 of the Uniform Commercial Code ("UCC"), and are therefore unenforceable.¹⁹⁰ Yet another court has declined to enforce a shrinkwrap license by characterizing the transaction as a sale, thus entitling the buyer to immunity from the license restrictions under the "first sale" doctrine.¹⁹¹ Still other courts have found shrinkwrap licenses enforceable under Article 2 of the UCC.¹⁹²

Over the last decade, attempts have been made to clarify the extent to which shrinkwrap licenses are enforceable under state law. The American Law Institute ("ALI") and the National Conference of Commissioners on Uniform State Laws ("NCCUSL") had been collaborating on drafting a new Article 2B to the UCC which would govern software sales and licenses,¹⁹³ but these groups reached an impasse and announced in April, 1999, they were abandoning their UCC effort in favor of a new proposal called the Uniform Computer Information Transactions Act ("UCITA").¹⁹⁴ The impasse was primarily due to disagreements concerning the enforceability of shrinkwrap licenses:

The nearly 10-year effort eventually had been seen as biased toward the software industry, with users feeling left out of the debate. For example, consumer protection advocates have slammed the provision that governs shrinkwrap or "click through" licenses as nothing more than giving total force of law to take-it-or-leave-it type adhesion contracts.¹⁹⁵

Despite criticism the UCITA is merely a "repackaging" of Article 2B,¹⁹⁶ the NCCUSL voted in July, 1999, to approve the final draft of the

189. See *Vault Corp. v. Quaid Software Ltd.*, 847 F.2d 255, 269 (5th Cir. 1988); see also *Foresight Resources Corp. v. Pfortmiller*, 719 F. Supp. 1006, 1010 (D. Kan. 1989) (noting *Vault* rendered the enforceability of shrinkwrap licenses questionable).

190. See *Step-Saver Data Sys. v. Wyse Tech., Inc.*, 939 F.2d 91, 98 (3d Cir. 1991); accord *Arizona Retail Sys., v. Software Link, Inc.*, 831 F. Supp. 759, 764-66 (D. Ariz. 1993); see also *ProCD Note*, *supra* note 183, at 399 ("Under *Step-Saver*, shrinkwrap licenses first brought to the purchaser's attention subsequent to purchase are not enforceable.").

191. See *Novell, Inc. v. Network Trade Ctr. Inc.*, 25 F. Supp. 2d. 1218, 1230 (D. Utah 1997); see also 17 U.S.C. § 109 (1994).

192. See *ProCD, Inc. v. Zeidenberg*, 86 F.3d 1447, 1450-53 (7th Cir. 1996) (holding a shrinkwrap license was enforceable against the purchaser when it was noted on the packaging and referred to the enclosed terms).

193. See *Article 2B Effort Divorced From UCC; Groups Agree to Repackage, Change Name*, 57 PAT. TRADEMARK & COPYRIGHT J. 490, 490 (Apr. 15, 1999) [hereinafter *Article 2B Effort*].

194. See *id.*

195. *Id.*

196. See *id.* ("[T]he newly dubbed UCITA may meet a chilly reception as well. Except

UCITA and to present it to the states for adoption.¹⁹⁷ The UCITA generally validates the typical shrinkwrap license.¹⁹⁸ Under the UCITA, shrinkwrap licenses fall under the general category of "mass market licenses."¹⁹⁹ They are enforceable if the licensee has had a chance to review its terms and manifest assent thereto by appropriate action.²⁰⁰ The only express limit on enforceability pertains to unconscionable terms or those contrary to public policy.²⁰¹ If adopted by the states, the UCITA would generally render shrinkwrap licenses enforceable under state law,

for a few [non-substantive] revisions . . . the new proposed model law will incorporate most, if not all, of the current 2B draft.").

197. See *Commissioners Give Thumbs Up*, 5 MULTIMEDIA STRATEGIST 1 (1999).

198. See generally *ProCD Note*, *supra* note 183, at 426-28 (detailing the historical development of Article 2B).

199. The UCITA defined "mass market license" as "a standard form that is prepared for and used in a mass-market transaction." See Unif. Computer Info. Transaction Act § 102(45) (1999). [hereinafter UCITA]. A "mass-market transaction" is:

- (A) a consumer contract; or
- (B) any other transaction with an end-user licensee if:
 - (i) the transaction is for information or informational rights directed to the general public as a whole including consumers, under substantially the same terms for the same information;
 - (ii) the licensee acquires the information or rights in a retail transaction under terms and in a quantity consistent with an ordinary transaction in a retail market; and
 - (iii) the transaction is not: (I) a contract for redistribution or for public performance or public display of a copyrighted work; (II) a transaction in which the information is customized or otherwise specially prepared by the licensor for the licensee other than minor customization using a capability of the information intended for that purpose; (III) a site license; or (IV) an access contract.

Id. § 102(46).

200. See *id.* § 112. Under UCITA:

- (a) A person manifests assent to a record or term if the person, acting with knowledge of, or after having an opportunity to review the record or term or a copy of it:
 - (1) authenticates the record or term to adopt or accept it;
 - (2) intentionally engages in conduct or makes statements with reason to know that the other party or its electronic agent may infer from the conduct or statement that the person assents to the record or term.
 - (d) Conduct or operations manifesting assent may be proved in any manner, including a showing that a procedure existed by which a person or an electronic agent must have engaged in the conduct or operations in order to obtain, or to proceed with use of the information or informational rights. . . .
 - (e) With respect to an opportunity to review, the following rules apply:
 - (1) A person has an opportunity to review a record or term only if the record or term is made available in a manner so that a reasonable person ought to have had it called to the person's attention and permit review.
 - (3) If a record or term is available for review only after a person becomes obligated to pay or begins its performance, the person has an opportunity to review only if:
 - (A) it had a right to a return if it rejected the record;
 - (B) the record proposed a modification of contract; [or]
 - (C) the record provided particulars of performance under Section 305[.]

Id.

201. See *id.* at § 211(a).

likely chilling the efforts of the intermediate copyist. Until then, the intermediate copyist may continue to argue shrinkwrap licenses prohibiting reverse engineering are unenforceable as a matter of state law.

B. Preemption of State Law Breach of License Actions

Assuming shrinkwrap licenses which prohibit reverse engineering will be enforceable, the copyright policy of idea dissemination will be jeopardized.²⁰² Accordingly, many commentators have opined enforcement of licensing prohibitions against reverse engineering of software should be preempted by the copyright laws.²⁰³ These commentators believe such prohibitions prevent the use of information committed to the public trust by the copyright laws. Whether an action for breach of license arising from the intermediate copying of software should be preempted depends on the operation of constitutional principles.²⁰⁴

Preemption, a concept anchored in the Supremacy Clause of the United States Constitution,²⁰⁵ takes three forms: explicit preemption, field preemption and conflict preemption.²⁰⁶ Congress has exercised its right to

202. See Apik Minassian, *The Death of Copyright: Enforceability of Shrinkwrap Licensing Agreements*, 45 UCLA L. REV. 569, 599–600 (1997) (noting allowing state law breach of license actions to enforce licensing prohibitions against reverse engineering would “render[] meaningless the balance struck by the *Sega* court.”).

203. See *id.* at 598. Contractual prohibitions against reverse engineering of software “restrict the free flow of information, which is the basis for the creation of new works and the fostering of creativity.” See *id.*; Davis, *supra* note 11, at 160–61 (“[C]lauses in agreements, and certainly in state laws, that purport to prohibit reverse engineering should be prohibited, or at least severely limited, on the basis that such provisions are preempted by the public policies behind the Copyright Act. . . . [T]he strong language of the Supreme Court in *Bonito Boats* and *Feist* would seem to support the . . . theory that prohibitions against reverse engineering are, or should be against public policy.”); *Breaking the Seal*, *supra* note 184, at 867 (“The scope of Article 2B . . . appears overly broad. This overbreadth may induce courts to fail to recognize that . . . terms [governing public domain information may] be preempted.”).

204. See Maureen A. O’Rourke, *Drawing the Boundary Between Copyright and Contract: Copyright Preemption of Software License Terms*, 45 DUKE L.J. 479 (1995) (providing a general discussion of Federal preemption of shrinkwrap licenses); David A. Rice, *Public Goods, Private Contract and Public Policy: Federal Preemption of Software License Prohibitions Against Reverse Engineering*, 53 U. PITT. L. REV. 543 (1992); see also Dennis S. Karjala, *Federal Preemption of Shrinkwrap and On-Line Licenses*, 22 U. DAYTON L. REV. 511, 531 (1997) (suggesting a mode of analysis in which “it is the element of actual bargaining that distinguishes a nonpreempted state contract claim from the preempted nominal ‘contract’ claim under a shrinkwrap license.”).

205. See U.S. CONST. art. VI, cl. 2.

206. See *English v. General Elec. Co.*, 496 U.S. 72, 78–79 (1990).

Our cases have established that state law is pre-empted under the Supremacy Clause . . . in three circumstances. First . . . pre-emption fundamentally is a question of congressional intent, and when Congress has made its intent known through explicit statutory language, the courts’ task is an easy one. Second, in the absence

explicitly preempt certain state law actions through the enactment of § 301 of the Copyright Act.²⁰⁷ This statute provides a state court action is preempted if it vindicates rights equivalent to the exclusive rights provided by § 106.²⁰⁸ Courts have generally interpreted this provision to mean only those state actions that contain an "extra element" beyond an infringement, such as reproduction, distribution, display or performance, will not be preempted.²⁰⁹ Courts also generally require the extra element to make the state action qualitatively different in nature from a copyright infringement claim.²¹⁰

of explicit statutory language, state law is pre-empted where it regulates conduct in a field that Congress intended the Federal Government to occupy exclusively. . . . Finally, state law is pre-empted to the extent that it actually conflicts with federal law.

Id. (citations omitted); *see also* *Hunter Douglas, Inc. v. Harmonic Designs, Inc.*, 153 F.3d 1318, 1331-36 (Fed. Cir. 1998) (discussing preemption in the patent law context), *overruled on other grounds*, *Midwest Indus. v. Karavan Trailers, Inc.*, 175 F.3d 1356 (Fed. Cir. 1999) (en banc).

207. *Cf.* Patent Act, 35 U.S.C. §§ 1-376, (not providing for explicit preemption); *Hunter Douglas*, 153 F.3d at 1332.

208. Section 301 provides in relevant part:

(a)[A]ll legal or equitable rights that are equivalent to any of the exclusive rights [of section 106] in works . . . within the subject matter of copyright as specified by sections 102 and 103 . . . are governed exclusively by this title. [N]o person is entitled to any such right or equivalent right in any such work under the common law or statute of any State.

17 U.S.C. § 301 (1994); *see also* *Daboub v. Gibbons*, 42 F.3d 285, 288-89 (5th Cir. 1995) (holding a state law claim is preempted if the subject matter of the action falls within the subject matter of copyright, and the claim protects rights equivalent to any of the exclusive rights of a federal copyright).

209. *See* *National Car Rental Sys., Inc. v. Computer Assocs. Int'l, Inc.*, 991 F.2d 426, 431 (8th Cir. 1993) ("If an extra element is 'required . . . in order to constitute a state-created cause of action, then the right does not lie within the general scope of copyright and there is no preemption.'" (quotations and citations omitted)); *Computer Assocs. Int'l, Inc. v. Altai, Inc.*, 982 F.2d 693, 716 (2d Cir. 1992) (noting § 301 preempts only those state law rights that "may be abridged by an act which, in and of itself, would infringe one of the exclusive rights provided by federal copyright law."). Professor Nimmer has stated the test for statutory preemption as follows:

The fact that the state-created right is either broader or narrower than its federal counterpart will not save it from preemption [I]f under state law the act of reproduction, performance, distribution or display, . . . will in itself infringe the state created right, then such right is preempted. But if qualitatively other elements are required, instead of or in addition to the acts of reproduction, performance, distribution or display, in order to constitute a state created cause of action, the right does not lie "within the scope of copyright," and there is no preemption.

1 M. NIMMER, *NIMMER ON COPYRIGHT*, § 1.01[B][1] at 1-12 to 1-13 (1999) (emphasis omitted).

210. *See, e.g., Computer Assocs.*, 982 F.2d at 716-17. "Under this so-called 'extra element' test, 'a state law claim is not preempted if the 'extra element' changes the 'nature of the action so that it is qualitatively different from a copyright infringement claim.'" *Id.* (emphasis omitted). However, an action 'will not be saved from preemption by elements such as awareness or intent, which alter "the action's scope but not its nature."' *Id.* (quoting *Mayer v. Josiah Wedgwood & Sons, Ltd.*, 601 F. Supp. 1523, 1535 (S.D.N.Y. 1985)).

No cases have addressed whether an action for breach of license contains a qualitatively-different extra element in the intermediate copying context. However, the majority view derived from other contexts suggests that such an action is not preempted. The rationale of these cases rests on the conclusion that an action for breach of license requires proof of an extra element, namely, a promise by the licensee which is not required to establish infringement liability.²¹¹ This view has not been universally adopted. Some district courts recognize that an action for copyright infringement is not qualitatively different in nature from a breach of license action in which the copyright holder contests reproduction, distribution, display or performance rights beyond the scope of the license.²¹² In short,

211. See *ProCD, Inc. v. Zeidenberg*, 86 F.3d 1447, 1453–55 (7th Cir. 1996); *Taquino v. Teledyne Monarch Rubber*, 893 F.2d 1488, 1501 (5th Cir. 1990); *Architectronics, Inc. v. Control Sys., Inc.*, 935 F. Supp. 425, 438 (S.D.N.Y. 1996) (providing a detailed discussion of the issue); *Brignoli v. Balch Hardy & Scheinman, Inc.*, 645 F. Supp. 1201, 1205 (S.D.N.Y. 1986); see also NIMMER, *supra* note 168, §1.01[B][1] at 1-12 to 1-13.

212. See *American Movie Classics Co. v. Turner Entertainment Co.*, 922 F. Supp. 926, 931–32 (S.D.N.Y. 1996) (“[T]he Court does not perceive a ‘qualitative difference’ between AMCC’s breach of contract claim . . . and its copyright claim Rather, it appears clear that the rights asserted under the contract claim are equivalent to the Copyright Act’s exclusive right of public performance. Accordingly, AMCC’s breach of contract claim is preempted.” (footnote omitted)); *ProCD*, 908 F. Supp. 640, 658–59 (W.D. Wis. 1996) (holding a claim for breach of a shrinkwrap licensing agreement was preempted because it was “an attempt to make an end run around copyright law”), *rev’d*, 86 F.3d 1447 (7th Cir. 1996); *Wolff v. Institute of Elec. & Elecs. Eng’rs, Inc.*, 768 F. Supp. 66, 69 (S.D.N.Y. 1991) (“In the case at bar, IEEE breached its contract with plaintiffs, embodied in the stock photo invoice, by infringing plaintiffs’ copyright. It is difficult to see how the resulting claims are qualitatively different. Accordingly the breach of contract claim is preempted.”); *Smith v. Weinstein*, 578 F. Supp. 1297, 1307 (S.D.N.Y. 1984), *aff’d*, 738 F.2d 419 (2d Cir. 1984).

To the extent plaintiff rests his contract claim not on breach of the terms of the contract but on Weinstein’s having copied his property . . . it is of course preempted. Plaintiff cannot merely rephrase the same claim citing contract law and thereby obtain relief equivalent to that which he has failed to obtain under copyright law.

Weinstein, 578 F. Supp. 1297, 1307.

The foregoing cases should be distinguished from cases in which the license restricts activity that is not equivalent to copyright’s exclusive rights. For example, in *National Car Rental*, the Eighth Circuit grappled with the question “whether a limitation on the uses to which a licensee may put a licensed work are preempted even though those uses do not involve the exclusive copyright rights.” *National Car Rental*, 991 F.2d at 431 (emphasis added). Because copyright law did not provide exclusive rights to the “use” of the copyrighted work, the court held plaintiff’s state law breach of license action was not preempted. See *id.* at 432 (“Because we decide that the specific contract right [plaintiff] seeks to enforce is not equivalent to any of the copyright rights, we do not need to decide whether a breach of contract claim based on a wrongful exercise of one of the exclusive copyright rights is preempted.”); see also *Acorn Structures, Inc. v. Swantz*, 846 F.2d 923, 926 (4th Cir. 1988); *Brignoli v. Balch Hardy & Scheinman, Inc.*, 645 F. Supp. 1201, 1205 (S.D.N.Y. 1986) (“A claim that a defendant made unauthorized use of copyrightable material falls squarely within § 301 and thus is pre-empted.” (citing *Peckarsky v. American Broad. Co.*, 603 F. Supp. 688, 695–96 (D.D.C. 1984))). However,

whether explicit preemption precludes state law breach of license actions is unclear.²¹³

Even if a breach of license action survives explicit preemption under § 301 of the Copyright Act, the propriety of the action must survive constitutional muster under field and conflict preemption. The line between field and conflict preemption is blurred. In fact, the Supreme Court has gone so far as to describe field preemption as a subset of conflict preemption.²¹⁴ Field preemption arises when Congress expresses its intent that federal law exclusively occupy the field in question. Such an intent is inferred from pervasive federal regulation or implication of a special federal interest.²¹⁵ Because § 301 allows non-equivalent state law claims to coexist with federal copyright law, it is difficult to argue Congress intended to preempt *all* state law actions regulating copyrightable subject matter by contract. Moreover, because contract actions have traditionally been relegated to state control, Congressional intent must be "clear and manifest" for field preemption to operate, which is not.²¹⁶ Therefore, it is unlikely state law breach of license actions are precluded under the principle of field preemption.²¹⁷

Instead, the real question is whether conflict preemption precludes state law breach of license actions.²¹⁸ The sine qua non of conflict

this "wrinkle" should have little applicability to the intermediate copying context. The contractual right the copyright holders seek to vindicate will usually be the intermediate copyists' promise not to copy the work for purposes of reverse engineering, conduct clearly within the scope of copyright's right of reproduction.

213. See O'Rourke, *supra* note 204, at 519 (noting courts "have not held uniformly that a breach of contract action is always sufficiently qualitatively different from one in copyright infringement such that it survives preemption"). It should be noted the legislative history of § 301 is especially unclear concerning the extent to which state law contract actions are preempted thereunder. See *id.* at 517-18.

214. See *English*, 496 U.S. at 79 n.5.

215. See *id.* at 79.

216. See *id.* ("Where . . . the field which Congress is said to have pre-empted' includes areas that have 'been traditionally occupied by the States,' congressional intent to supersede state laws must be 'clear and manifest.'") (quoting *Jones v. Rath Packing Co.*, 430 U.S. 519, 525 (1977)) (citations modified).

217. Cf. *Hunter Douglas*, 153 F.3d at 1334.

With respect to field pre-emption, Title 35 occupies the field of patent law, not commercial law between buyers and sellers. Not only does . . . precedent show the substantial difference between the two fields, but it also demonstrates that the regulation of business affairs is traditionally a matter for state regulation. Hence, under the Court's preemption jurisprudence, the presumption against preemption has greater force because of the states' long-standing governance of such affairs. That reinforced presumption instructs against field preemption.

Id. (citations and quotations omitted).

218. Cf. *id.* at 1334-35 (noting, in a discussion of whether patent law preempts unfair competition claims under state law, "rejecting field preemption is the better choice in this context,

preemption is the preclusion of state laws which "stand[s] as an obstacle to the accomplishment and execution of the full purposes and objectives of Congress."²¹⁹ As previously noted, the fair use and misuse doctrines (and perhaps § 117) promote the federal objectives of disseminating ideas and ensuring such ideas remain within the scope of the public domain.²²⁰ Allowing a copyright holder to vindicate his right through a state law breach of license action against an intermediate copyist renders these federal copyright defenses inapplicable and upsets the balance established in the federal copyright scheme. Accordingly, it is reasonable to argue a state law breach of license action should be preempted because it would effectively regulate subject matter Congress intends to relegate to the public domain.²²¹

This conclusion is consistent with *Bonito Boats, Inc. v. Thunder Craft Boats, Inc.*,²²² a patent case presenting an analogous situation. In *Bonito Boats*, the Supreme Court held patent law preempts state law when it attempts to protect subject matter that federal patent law relegates to the public domain.²²³ In striking down a state law prohibiting the copying of boat hull designs by direct molding, the Court stated "the federal patent laws must determine not only what is protected, but also what is free for all to use. . . . [S]tate regulation of intellectual property must yield to the extent that it clashes with the balance struck by Congress in our patent laws."²²⁴ Because the state statute at issue "conflict[ed] with the 'strong federal policy favoring free competition in ideas which do not merit patent protection,'"²²⁵ it was preempted.

The same reasoning should apply to preempt state law breach of license actions brought against intermediate copyists.²²⁶ In fact, the Court

for conflict preemption is a more precise means of determining which state law [unfair competition] causes of action are preempted than the blunt tool of field preemption").

219. *English*, 496 U.S. at 79 (quoting *Hines v. Davidowitz*, 312 U.S. 52, 67 (1941)).

220. Other federal law and policy may also strengthen the case for constitutional preemption in this context. See O'Rourke, *supra* note 204, at 546 (discussing the notion that antitrust law prevents a competitor from controlling an "essential facility," and accordingly contractual provisions against disassembly of "essential" operating systems should not be enforced).

221. Cf. *Bonito Boats, Inc. v. Thunder Craft Boats, Inc.*, 489 U.S. 141, 151 (1989) ("The [subject matter] requirements of patentability embody a congressional understanding, implicit in the Patent [and Copyright] Clause itself, that free exploitation of ideas will be the rule, to which the protection of a federal patent is the exception.").

222. 489 U.S. 141 (1989).

223. See *Bonito Boats*, 489 U.S. at 156 ("States may not offer patent-like protection to intellectual creations which would otherwise remain unprotected as a matter of federal law.").

224. *Id.* at 151-52.

225. *Id.* at 168 (citing *Lear, Inc. v. Adkins*, 395 U.S. 653, 656 (1969)).

226. Cf. O'Rourke, *supra* note 204, at 540 ("*Bonito Boats* strongly suggests that

noted direct molding, a form of reverse engineering, would likely spur technological innovation in the art of boat design:

The duplication of boat hulls and their component parts may be an essential part of innovation in the field of hydrodynamic design. Variations as to size and combination of various elements may lead to significant advances in the field. Reverse engineering of chemical and mechanical articles in the public domain often leads to significant advances in technology. If Florida may prohibit this particular method of study and recomposition of an unpatented article, we fail to see the principle that would prohibit a State from banning the use of chromatography in the reconstitution of unpatented chemical compounds, or the use of robotics in the duplication of machinery in the public domain.²²⁷

At least one circuit court has realized the federal policies underlying the aforementioned copyright defenses²²⁸ are of sufficient strength to preempt a state law breach of license claim against an intermediate copyist. In *Vault Corp. v. Quaid Software Ltd.*,²²⁹ the Fifth Circuit held a state statute permitting a software holder to prohibit decompilation or disassembly by license touched on an area of federal law and was preempted. The court reasoned:

[s]ection 117 of the Copyright Act permits an owner of a computer program to make an adaptation of that program provided that the adaptation is either "created as an essential step in the utilization of the computer program in conjunction with a machine," § 117(1), or "is for archival purpose only," § 117(2).²³⁰

While the Fifth Circuit's preemption analysis is outdated²³¹ and its application of § 117 is questionable,²³² the court's decision is consistent

prohibitions against decompilation accompanying mass-marketed products, whether enforced as a matter of state statute or contract law, are preempted under *patent law*." (emphasis added)).

227. *Bonito Boats*, 489 U.S. at 160.

228. See *supra* Part IV.

229. 847 F.2d 255 (1988); see also *supra* notes 172-175, and accompanying text.

230. *Vault*, 847 F.2d at 270.

231. The U.S. Supreme Court has previously held state laws that merely "touch upon the area" governed by federal intellectual property law are preempted. See *Sears, Roebuck & Co. v. Stiffel Co.*, 376 U.S. 225, 229 (1964); *Compco Corp. v. Day-Brite Lighting, Inc.*, 376 U.S. 234 (1964). However, the Court in *Bonito Boats* explained those cases should not be read as having such a broad "preemptive sweep." *Bonito Boats*, 489 U.S. at 154. As the Court explained, such a broad preemptive principle could not be properly drawn from the Court's precedent, including *Sears* itself. See *id.* at 154-55. Nonetheless, the Court stated the "*Sears* Court correctly concluded that the States may not offer patent-like protection to intellectual creations which

with the notion that allowing breach of license actions would upset the balance struck by the copyright laws regarding what is protectable and what is not. The policies supporting fair use and misuse provide even stronger grounds for preemption because these copyright defenses more clearly legitimize the activities of the intermediate copyist than do § 117.²³³

These conclusions about conflict preemption notwithstanding, some legal precedent suggests that an intermediate copyist facing a breach of license suit may have difficulty asserting a copyright preemption defense. In *ProCD, Inc. v. Zeidenberg*,²³⁴ the Seventh Circuit held that an action brought under a shrinkwrap provision that limited use of the software to non-commercial purposes was not preempted by copyright law.²³⁵ The court's analysis focused broadly on whether copyright preempted state contract law in general,²³⁶ and concluded "a simple two-party contract is not 'equivalent to any of the exclusive rights within the general scope of copyright' and therefore may be enforced."²³⁷ This holding has been criticized as overbroad and lacking a rigorous preemption analysis.²³⁸ If it

would otherwise remain unprotected as a matter of federal law." *Id.* at 156. It affirmed the notion that "the fact that a particular item lies within the subject matter of the federal patent laws [does not] necessarily preclude the States from offering limited protection which does not impermissibly interfere with the federal patent scheme." *Id.* at 165; *see also* *Aronson v. Quick Point Pencil Co.*, 440 U.S. 257, 262 (1979) ("State law is not displaced merely because the contract relates to intellectual property which may or may not be patentable; the states are free to regulate the use of such intellectual property in any manner not inconsistent with federal law.").

232. *See supra* Part IV.C.

233. *Cf. O'Rourke, supra* note 204, at 538.

Second and perhaps more importantly, *Sega* rejected *Vault's* reliance on § 117 as sanctioning a right to decompile. *Sega's* holding was grounded in a more sophisticated understanding of computer technology as well as an examination of the history behind the enactment of the section. Thus, since *Vault*, the preemption conflict has been recharacterized not as a clash between § 117 and private contractual provisions, but between the limited *Sega/Atari* fair use rights and private contract.

Id.

234. 86 F.3d 1447 (7th Cir. 1996).

235. *ProCD*, 86 F.3d at 1447.

236. *See id.* at 1454 ("But are rights created by contract 'equivalent to any of the exclusive rights within the general scope of copyright'? Three courts of appeals have answered 'no.' . . . A copyright is a right against the world. Contracts, by contrast, generally affect only their parties; strangers may do as they please, so contracts do not create 'exclusive rights.'" (citations omitted)).

237. *Id.* at 1455.

238. *See Minassian, supra* note 202, at 601-02.

Although the Seventh Circuit warned against the adoption of a rule that anything with the label "contract" is necessarily outside the preemption clause, the court's analysis and reasoning inevitably lead to such a conclusion. The court did not focus its analysis on the specific licensing restriction that *ProCD* was trying to enforce. Instead, it took a broader view to determine whether contract rights can be equivalent to the exclusive rights provided by copyright law. . . . The conclusion that it reached is not surprising considering the broad perspective it took in its

is applied by other circuits without proper scrutiny, it could potentially harm the intermediate copyist in his effort to establish conflict preemption.

VI. ACHIEVING INTEROPERABILITY AND THE DIGITAL MILLENNIUM COPYRIGHT ACT

Intermediate copyists are often interested in studying another author's software work for the purpose of developing a program that will function or "interoperate" with the studied program.²³⁹ This situation typically arises when the intermediate copyist desires to create a piece of application software that will function with the original author's copyrighted operating system software.²⁴⁰

Often the copyright holder may wish to prevent others from accessing the software code so the copyright holder can dominate the application software market for the operating system.²⁴¹ In such a case, the copyright holder may restrict access to its software code through the use of a password or some other sort of electronic "lock-and-key" scheme. Such schemes are easy to create and often easy for the intermediate copyist or other interested party to circumvent.²⁴² Yet, even though an intermediate

analysis. No court would hold that the field of contract law is entirely preempted by federal intellectual property law. Any court that did so would destroy the established and recognized role of state contract law in interpreting licensing agreements. . . . By following the Seventh Circuit's analysis, however, it is hard to imagine any type of contract that could be preempted by section 301(a) of the Copyright Act. After *ProCD*, the mere existence of an enforceable licensing agreement, regardless of the restrictions it imposes upon the end user, is sufficient to avoid preemption by copyright law. What the Seventh Circuit seems to have suggested by its ruling is that the existence of a contract between parties supersedes the federal copyright system. . . . However, the creation of a dual copyright-protection scheme is exactly what Congress intended to eliminate when it created 17 U.S.C. § 301.

Id.

239. See *Sony Computer Entertainment, Inc. v. Connectix Corp.*, 203 F.3d 596, 599 (9th Cir. 2000) ("Software engineers designing a product that must be compatible with a copyrighted product frequently must reverse engineer the copyrighted product to gain access to the functional elements of the copyrighted product.").

240. See generally *id.*

241. For example, in *Sega Enterprises v. Accolade, Inc.*, plaintiff Sega attempted to prevent access to its game console through the use of a "Trademark Security System" or "TMSS." As explained by the *Sega* court:

[T]he 'Genesis III' [console] incorporates the licensed TMSS. When a game cartridge is inserted, the microprocessor contained in the Genesis III searches the game program for four bytes of data consisting of the letters 'S-E-G-A' (the 'TMSS initialization code'). If the Genesis III finds the TMSS initialization code in the right location, the game is rendered compatible and will operate on the console.

Sega, 977 F.2d at 1515.

242. See *Vault Corp. v. Quaid Software Ltd.*, 847 F.2d 255 (5th Cir. 1988) (involving Vault's anti-copying software and Quaid's creation of a program to defeat that software).

copyist would probably be engaging in a legal pursuit under the copyright laws, the Digital Millennium Copyright Act ("DMCA")²⁴³ may, under certain circumstances, make such circumvention illegal.

The DMCA, signed into law October 28, 1998, was intended to implement two international treaties,²⁴⁴ the World Intellectual Property Organization ("WIPO") Copyright Treaty and the WIPO Performances and Phonograms Treaty. Both treaties generally require "adequate legal protection" and "effective legal remedies" against the circumvention of "technical measures" designed to protect their rights under these treaties or the Berne Convention.²⁴⁵ In response to this obligation, the DMCA provides in § 1201 (a)(1)(A) of Title 17 that "[n]o person shall circumvent a technological measure that effectively controls access to a work protected."²⁴⁶ Through this prohibition, Congress created a new right to control access to a copyrighted work by a technological measure, the violation of which is made directly actionable under the DMCA.²⁴⁷ Section 1201(a)(1)(A) takes effect "at the end of the 2-year period beginning on the date of the enactment of this chapter"²⁴⁸ on October 28, 2000.

The prohibition against circumvention of protective measures is not absolute as to the intermediate copyist. The "safe harbor" provision of § 1201(f)(1) prescribes:

[n]otwithstanding the provisions of subsection (a)(1)(A), a person who has lawfully obtained the right to use a copy of a computer program may circumvent a technological measure that effectively controls access to a particular portion of that program for the sole purpose of identifying and analyzing those elements of the program that are necessary to achieve interoperability of an independently created computer program with other

243. Digital Millennium Copyright Act, Pub. L. No. 105-304, 112 Stat. 2860 (1998).

244. See H.R. Rep. No. 105-845, at 159 (1998).

245. See World Intellectual Property Organization Copyright Treaty ("WIPO"), Dec. 20, 1996, art. 11, S. TREATY DOC. NO. 105-17 (1997); see also WIPO Performances and Phonograms Treaty, Dec. 20, 1996, art. 18, S. TREATY DOC. NO. 105-17 (1997).

246. 17 U.S.C. § 1201(a)(1)(A) (Supp. IV 1998).

As used in this subsection—(A) to 'circumvent a technological measure' means to descramble a scrambled work, to decrypt an encrypted work, or otherwise to avoid, bypass, remove, deactivate, or impair a technological measure, without the authority of the copyright owner; and (B) a technological measure 'effectively controls access to a work' if the measure, in the ordinary course of its operation, requires the application of information, or a process or a treatment, with the authority of the copyright owner, to gain access to the work.

17 U.S.C. § 1201(a)(3) (Supp. IV 1998).

247. See *id.* §§ 1203–1204 (prescribing civil remedies and criminal penalties respectively).

248. See *id.* § 1201(a)(1).

programs, and that have not previously been readily available to the person engaging in the circumvention, to the extent any such acts of identification and analysis do not constitute infringement under this title.²⁴⁹

The legislative history reveals § 1201(f)(1) was added in response to concerns that § 1201(a)(1)(A) would inadvertently upset the balance *Sega* struck between permissible and impermissible behavior of the intermediate copyist.²⁵⁰ This is not to say § 1201(f)(1) has codified the holding of *Sega*. Section 1201(f)(1) merely provides a defense against an alleged violation of the right of access of § 1201(a)(1)(A). It provides no defense against a charge of copyright infringement, the issue in *Sega*.²⁵¹ However, whether the intermediate copyist's actions constitute copyright infringement is relevant to the applicability of § 1201(f)(1), which allows for circumvention of a technical measure only to the extent the intermediate copyist's actions "do not constitute infringement under this title."²⁵²

The text of § 1201(f)(1) makes explicit not all intermediate copyists will fall within the scope of that provision. Section 1201(f)(1) is limited to the narrow range of circumstances in which circumvention was accomplished "for the sole purpose of identifying and analyzing those elements of the program that are necessary to achieve interoperability of an independently created computer program with other programs, and that have not previously been readily available to the person engaging in the circumvention."²⁵³ Thus, only a subset of intermediate copyists will enjoy protection from § 1201(a)(1)(A) liability under § 1201(f)(1). Intermediate copyists who circumvent a work's protective measures but do not strive to

249. *Id.* § 1201(f)(1)(A).

250. *See The WIPO Copyright Treaties Implementation Act: Hearings on H.R. 2281 Before the Subcomm. on Telecoms., Trade, and Consumer Protection of the House Comm. on Commerce*, 105th Cong. 48-49 (1997) (statement of Walter H. Hinton, Vice President of Storage Technologies Corp.) ("Although it might not be intended to prevent reverse engineering, hamper interoperability and curtail competition, that would be the result if H.R. 2281 [an earlier version of the bill that ultimately passed] were to pass into law in its current form.").

251. Some of the language appearing in the legislative history would suggest the contrary. *See* H.R. Rep. No. 105-551(II), at 42 (noting that a provision in the Senate's version of the bill, S. 2037, which was ultimately adopted by the House, "explicitly authorize[s] reverse engineering for purposes of achieving interoperability between computer products"). However, such ambiguous statements should not overrule the clarity of the text of § 1201(f)(1) itself. *See, e.g., Ex parte Collett*, 337 U.S. 55, 61 (1949) ("[T]here is no need to refer to the legislative history where the statutory language is clear. 'The plain words and meaning of a statute cannot be overcome by a legislative history which, through strained processes of deduction from events of wholly ambiguous significance, may furnish dubious bases for inference in every direction.'" (citing *Gemsco v. Walling*, 324 U.S. 244, 260 (1945))).

252. 17 U.S.C. § 1201(f)(1) (Supp. IV 1998).

253. *Id.*

create a new piece of software which will interoperate with that work should be wary of potential liability under the DMCA.

A full discussion of the impact of the DMCA is beyond the scope of this Article. However, because not all reverse engineers are absolved from DMCA liability, it is questionable whether the DMCA has impermissibly shifted the balance too far in the direction of author's rights and away from the right of the intermediate copyist to investigate and use unprotectable subject matter. It would appear that effectively precluding access to such subject matter flaunts copyright's purpose in the dissemination of ideas.

VII. CONCLUSION

It is always dangerous to make generalizations, especially in an area of law as unsettled as the foregoing. Nevertheless, the following conclusions are drawn.

Intermediate copyists in a usual case are likely copyright infringers because they must necessarily make copies of an original work in violation of the reproduction right of § 106(1) in order to understand the unprotectable elements within. However, these intermediate copyists can call upon several copyright defenses which take on an increased vigor in the intermediate copying context, including fair use, misuse and perhaps § 117 of the Copyright Act. Even if intermediate copyists can escape liability for copyright infringement, they may have trouble avoiding liability under shrinkwrap licenses that prohibit reverse engineering. The enforceability of such licenses under state law is questionable. Legislative proposals designed to clarify the matter would generally render such licenses enforceable, much to the intermediate copyist's chagrin. The maintenance of a breach of license action might be preempted under § 301 and should probably also be preempted under the principles of conflict preemption, notwithstanding broad contrary statements from some courts. Finally, the DMCA will prevent certain intermediate copyists from circumventing measures designed to protect even unprotectable expression even if those intermediate copyists do not infringe the protected work.

